SDMS Document
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WORK PLAN
REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)
SCIENTIFIC CHEMICAL PROCESSING (SCP) SITE
CARLSTADT TOWNSHIP, BERGEN COUNTY
NEW JERSEY

OCTOBER 1, 1985
JOB NO. 14485-001-10

Dames & Moore

CRANFORD, NEW JERSEY

000678

TABLE OF CONTENTS

003680

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

1.1 GENERAL

Dames & Moore has prepared this work plan for the Remedial Investigation/Feasibility Study (RI/FS) to be conducted at the abandoned Scientific Chemical Processing (SCP) Company site, located in Carlstadt Township, Bergen County, New Jersey (Figure 1). Neither this submission nor any action taken in accordance herewith shall be evidence against, an admission by, a waiver by, or estoppel against any Potentially Responsible Party (PRP).

This work plan was prepared on the basis of:

- o An understanding of general site conditions based on a site visit and a briefing by representatives of certain PRP's on June 24, 1985, and a second site visit on July 8, 1985;

- o Discussions between Dames & Moore and representatives of the U.S. Environmental Protection Agency (EPA), Region II, and the PRP Committee during meetings on July 3 and September 20, 1985;

- o Information included in a draft Remedial Action Master Plan (RAMP) prepared for the EPA for the SCP site (Reference 1).

- o An analysis of additional background information obtained from various sources (see References).

This work plan contains Dames & Moore's professional judgments based upon information obtained from the sources described above. Dames & Moore assumes no responsibility for the adequacy of those sources, for any errors therein, or for the existence of other or different facts or conditions than those reflected in the indicated sources.

This work plan should be relied upon only to the extent corroborated by subsequent site investigations, laboratory analysis, and the performance of the tasks outlined herein. The work plan and assumptions should be reviewed and should be modified or expanded, as appropriate, in light of additional information that is developed during the performance of the described tasks.

The work plan was prepared in accordance with the EPA format and guidelines outlined in the following documents:

- o "Guidance on Remedial Investigations Under CERCLA," USEPA, May 1985; (Reference 2); and

- o "Guidance on Feasibility Studies Under CERCLA," USEPA, April 1985 (Reference 3).

This RI/FS work plan provides the framework for an evaluation of the Carlstadt site and the basis for contractor proposals to perform the RI/FS investigations. It is anticipated that the four tanks and one tank trailer presently remaining on-site and reportedly containing PCB's will be removed by others prior to the initiation of the RI field program.

This RI/FS work plan considers regional geologic and geohydrologic data compiled during preparation of the plan. In general, the description of the subsurface conditions developed in the preparation of this work plan differs from that presented in the RAMP and has a significant influence on project plans. Site stratigraphy indicates that bedrock is much shallower and, therefore, the explorations proposed in this plan were developed accordingly.

00068

1.2 SCOPE OF WORK

The scope of work of the RI/FS consists of a total of 13 tasks, as follows:

Remedial Investigation

Task 1	Description of Current Situation
Task 2	Plans and Management
Task 3	Site Investigation
Task 4	Site Investigation Analysis
Task 5	Laboratory and Bench-Scale Studies (optional)
Task 6	Reports
Task 7	Community Relations Support

Feasibility Studies

Task 8	Remedial Objectives and Preliminary Remedial Technologies
Task 9	Development of Alternatives
Task 10	Initial Screening of Alternatives
Task 11	Evaluation of the Alternatives
Task 12	Preliminary Report
Task 13	Final Report

Descriptions or outlines of the RI and FS tasks are presented in Sections 2.0 and 3.0, respectively, and form the scope of work to be performed by the contractor to be selected by the Committee. These tasks are described in more detail in the EPA guidance documents (References 2 and 3). The RI/FS work should be conducted in accordance with those documents and this Work Plan. Portions of these tasks, such as the scope of the Site Investigation (Task 3) are set forth in this work plan. In addition, a generalized "Description of the Current Situation" (Task 1) has been provided for the contractor's information. However, the information contained in Task 1 should be reviewed by the contractor, updated, and completed, as necessary.

2.0 REMEDIAL INVESTIGATION

2.1 PURPOSE

The purpose of the remedial investigation (RI) is to:

a. identify and characterize the nature and extent, if any, of contamination on-site, as well as potential off-site contamination resulting from past site activities;

b. assess the extent to which any detected contamination poses a threat to public health, welfare, or the environment; and

c. gather data for the development and evaluation of remedial action alternatives (feasibility study).

2.2 SCOPE OF WORK

The scope of work for the remedial investigation will consist of the following seven tasks:

Task 1	Description of Current Situation
Task 2	Plans and Management
Task 3	Site Investigation
Task 4	Site Investigation Analysis
Task 5	Laboratory and Bench-Scale Studies
Task 6	Preparation of Reports
Task 7	Community Relations Support

The scope of each task is described in detail below.

000686

2.3 TASK 1 – DESCRIPTION OF CURRENT SITUATION

2.3.1 Site Background

2.3.1.1 Location

The SCP site is located at 216 Paterson Plank Road in Carlstadt Township, Bergen County, New Jersey, at latitude 40° 49' 30" N, longitude 74° 04' 38" W. The site is a corner property, bounded by Paterson Plank Road on the south, Gotham Parkway on the west, by Peach Island Creek on the north, and an industrial facility on the east (Figure 1).

2.3.1.2 Site History

The site was used by Scientific Chemical Processing, Inc. for recycling industrial wastes from 1971 until it was shut down by court order in October 1980. Prior to 1971, the site was reportedly operated by others for solvent refining and recovery since the 1950's.

While in operation, the facility received liquid wastes (primarily hydrocarbons) from chemical and other industrial manufacturing firms, then processed the wastes to reclaim marketable products, such as methanol, which was sold to the originating companies. In addition, other liquid hydrocarbons were processed to some extent, then blended with fuel oil, and the mixtures were typically sold back to the originating companies, or to cement and aggregate kilns , as boiler fuel.

In addition to the wastes noted above, the site also received other items, including paint sludges and acids, although it is not clear just what was intended in terms of their processing/disposition.

Cessation of operations at the site was ordered by the New Jersey Superior Court in 1980. At the time of the court-ordered shutdown, over 300,000 gallons of hazardous materials were stored on the site (Reference 1).

000687

2.3.1.3 Site Layout

The site occupies a relatively flat, sparsely-vegetated area of approximately 5.9 acres. It is fenced on three sides (east, west, south), with the main entrance gate located on Paterson Plank Road, near the southeast corner of the site. Most operations were conducted in three sections of the site (Figure 2):

- o Tank farm;
- o Still and boilerhouse;
- o Staging platform and thin-film evaporator.

The tank farm has an unlined containment area that is depressed one to two feet with respect to the surrounding surface elevation. At one time, the tank farm contained 18 tanks. Presently, only four tanks remain at the site. These tanks are marked as containing PCB's. The structural integrity of these tanks is suspect. Streaks of discoloration appear on the sides of several of the tanks. At least two tanks have been patched with epoxy sealants and makeshift wooden braces have been installed for additional support. Leaks have been reported from one or more of these tanks by EPA and NJDEP.

The drum storage areas are now vacant, after nearly 4,000 drums were reportedly removed to the firm's Newark site sometime between May 1979 and December 1980. These drum storage areas, comprising the southeastern half of the site, are unlined and have no spill containment provisions.

The still and boilerhouse section of the site contained tank trailers used to receive and feed substances run through the still. EPA and NJDEP reported that the structural integrity of the tanks on the tank trailers (which have been removed off-site) was also suspect, with discoloration indicating the possibility of leaks. Further, one of the removed trailer tanks was heavily patched with epoxy sealants and makeshift wooden braces. The former still site is surrounded by a small dike, but the trailer parking slots are not. The ground is covered by stones with a pink coloration that may indicate past spillage.

The staging platform was used for transferring and storing wastes. The thin-film evaporator and adjoining small tank farm, which contained 10 tanks, are surrounded by a cinderblock dike which is broken in several places. A trailer tank is still located southeast of the small tank farm, and is marked as containing PCB's.

Additional features on the site include:

- Two abandoned small buildings near the site entrance reportedly used as a garage and office, respectively;

- Two apparent sludge disposal areas near the northeastern corner of the site (a 1979 aerial photograph shows a lagoon or sludge pit in the northwest quadrant of the site);

- The cut portion of tank buried near the tank farm (contents and configuration unknown);

- A few soil and miscellaneous debris mounds, possibly generated during the initial remedial measures and the dismantling of the facility;

- Miscellaneous debris, including crushed drums, strewn throughout the site;

- Some seeps of discolored ground water discharging into the Peach Island Creek, observed by Dames & Moore personnel during a recent site visit; and

- Patches of discolored soil at various locations throughout the site.

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2.3.1.4 Physiography and Geology

2.3.1.4.1 Physiography

The site is located within the Piedmont Physiographic Province, in a filled section of the Hackensack Meadowlands, at an elevation of about 8 to 10 feet above mean sea level (Figure 1). Surface runoff appears to be primarily to the northeast into Peach Island Creek. The site is generally flat and covered mostly by fill composed of gravelly soil, with admixtures of various types of construction rubble, including concrete, bricks, and metal. The origin of this fill is not known.

2.3.1.4.2 Geology

a. General

The following section describes the general stratigraphy of the site as compiled based on boring data from the Meadowlands Sports Complex (Reference 4), located across Paterson Plank Road from the site. Generalized geologic cross sections based on these data are presented on Figure 3.

The stratigraphic column at the site appears to consist of the following major units, in ascending order:

1) bedrock
2) glacial till
3) lacustrine silty clay
4) silty sand
5) meadow mats and peat
6) miscellaneous fill

These strata are described in more detail below:

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1. Bedrock

The Piedmont Physiographic Province is locally characterized by Upper Triassic rocks of the Newark Group. These rocks form the broad Piedmont Plain which slopes toward the southeast. The site is underlain by the Brunswick Formation, which consists predominantly of red shale and sandstone and dips gently to the northwest. This formation constitutes the principal regional aquifer (Reference 5).

Based on boring and well log data from the site vicinity (References 5 and 6), the top of the bedrock in the area is at a depth ranging from about 40 to 120 feet. These data suggest that on-site the depth to bedrock would be approximately 60 feet (Figure 3), as compared to a depth of 295 feet presented in the RAMP.

2. Glacial Till

The bedrock is overlain by reddish brown till, consisting of a heterogeneous mixture of boulders, cobbles, gravel, sand, silt and clay. Within the area of the Meadowlands Sports Complex, located immediately south of the site, the till ranged in thickness from 5 to 40 feet. In the borings nearest the site the thickness of the till was approximately 15 feet.

3. Lacustrine Silty Clay

The till is overlain by a stratum consisting predominantly of lacustrine varved silty clay and occasional lenses of fine sand. In the vicinity of the site, this stratum consists of a near-surface desiccated gray-brown clay unit and a lower red-brown unit. The total thickness of the stratum at the site is estimated to range from about 20 to 30 feet. However, approximately 4,000 feet south of the site, this stratum is completely absent, whereas in some generally north-south trending subsurface channels it can be more than 100 feet thick (Figure 3).

000691

4. Silty Sand

The sand stratum, consisting primarily of gray, medium to fine silty sand, ranges in thickness from about one to four feet.

5. Meadow Mat or Peat

The natural surface of the Meadowlands is covered with a layer of organic material commonly known as meadow mat or peat, consisting primarily of marsh vegetation in various stages of decay. Locally, the meadow mat is underlain by completely decomposed silty peat. The meadow mat varies in thickness from about 4 to 12 feet. Locally, however, this layer may be absent, possibly as a result of excavation and removal during filling operations.

6. Fill

Large portions of the Meadowlands have been used for years as a dumping ground for rubbish and solid waste, as well as for construction and demolition debris. This miscellaneous of unknown origin fill was generally randomly placed. At the site, the thickness of the fill is estimated to be about five feet.

2.3.1.5 Hydrology

Surface runoff appears to be primarily to the northeast into Peach Island Creek, which originates approximately 1,500 feet east of the site. At a point approximately 2,000 feet northwest of the site, Peach Island Creek discharges into Berry's Creek, which in turn discharges into the Hackensack River at a point approximately 2.5 miles downstream from its confluence with Peach Island Creek. All of these water bodies are apparently influenced by tides.

Presently, there are no site-specific geohydrologic data available. However, based on the available stratigraphic information, ground water is expected to occur in a phreatic (unconfined) state within the miscellaneous fill and/or the

000692

underlying natural strata (meadow mats, sand) above the silty clay layer. Based on the topography of the site and the surrounding meadowlands, it is estimated that the phreatic ground water table is at a depth of approximately five feet.

A confined or perhaps semi-confined aquifer is expected to occur in the glacial till and the underlying bedrock. The Brunswick Formation is a known aquifer yielding water primarily from fractures in the relatively impervious rock. Ground water yield is, therefore, dependent on the frequency and magnitude of fractures. Insofar as the lateral degree of fracturing varies considerably within the formation, ground water yield also varies. Fracturing decreases with depth and, therefore, most of the ground water is produced by the upper, highly fractured part of the formation.

Well logs of several bedrock wells (Table 1) drilled in the vicinity of the site indicated that the depth to the static water level in wells penetrating the deeper aquifer ranges generally from 10 to 50 feet and averages about 40 feet, indicating an artesian condition, as these wells are generally 150 to more than 400 feet deep and are open to the aquifer below the overlying clay layer. Water levels in the bedrock aquifer may be influenced by tides.

There is no site-specific information available on the ground water flow direction. It may be assumed that the flow direction of the upper unconfined aquifer is to the northeast, toward Peach Island creek, as suggested by at least two ground water seeps observed along the stream bank. However, the ground water flow direction may be influenced by tides and be, therefore, variable.

No information is available on the ground water flow direction in the bedrock aquifer. Regional data indicate that the flow direction depends on the rock fracture patterns and, therefore, may be highly variable.

2.3.1.6 Climate

Climate and meteorological conditions at the site have been characterized from weather records available from the National Weather Service at Newark

00 693

International Airport. The airport is located approximately six miles southeast of the site in a similar physiographic setting. The data are considered representative of the site.

The climate of the site is humid and is typified by moist, warm summers and moderately cold winters with winds of moderate velocity. Prevailing winds in the area are from the southwest with only small seasonal variations in direction. The average annual temperature at the airport between 1944 and 1983 was 53.9 degrees Fahrenheit. In the summer, there are long periods of time when the weather remains very hot, especially when the wind is from the west-southwest and a Bermuda high-pressure system is established. Cold temperatures in the winter are experienced when continental polar winds are blowing from the northwest (Reference 7). Wind rose diagrams showing predominant wind directions are presented in Appendix A.

The average annual precipitation for the area is approximately 42 inches based on data from 1944 to 1983. Precipitation falls fairly uniformly throughout the year, although the region is influenced by seasonal tropical storms and hurricanes.

Evaporation studies performed in the area between 1956 and 1970 show that the average annual Class A pan evaporation for Newark is 49.7 inches. Pan evaporation is highest in the month of July at 7.0 inches and lowest in the month of December at 1.6 inches (Reference 8). Free water surface evaporation is the amount of water evaporated from a shallow lake, wet soil, or other moist, natural surface. It is roughly 70 percent of the evaporation from a Class A pan for the same meteorological conditions. The annual free water surface evaporation for Newark is calculated to be approximately 35 inches. The average annual precipitation of 42 inches minus the average annual potential evaporation of 35 inches leaves a net precipitation of approximately seven inches which, in theory, is the amount of water available for ground water recharge and surface runoff.

000691

2.3.2 Nature and Extent of the Problem

2.3.2.1 Potential Sources of Contamination

Potential on-site sources of contamination include, but may not be limited to, hazardous chemicals which may occur in one or more of the following:

- The tank farm along the southwestern property boundary. The four tanks currently in this area are to be removed prior to the initiation of the RI field activities;
- One tank trailer, located in the northern part of the site;
- A cut portion of a tank buried near the tank farm (contents unknown);
- Miscellaneous debris, including drums and other containers;
- Apparent sludge or filter material observed in the northeastern quadrant of the site;
- Underground piping or sewer system;
- Potentially buried tanks or drums;
- Sites of past operations, such as the thin-film evaporator and staging platform; and
- Other unidentified sources.

2.3.2.2 Hazardous Materials

It is reported (Reference 1) that at the time the SCP operation was shut down in 1980, over 300,000 gallons of hazardous materials were stored on-site. These

000695

were primarily in liquid form and included solutions, emulsions and suspensions, with some possible sedimentation. An SCP inventory dated May 10, 1979 is presented in Appendix B.

However, significant differences were reported between this and other inventories submitted by SCP to NJDEP. Therefore, this information must be verified by the contractor during Task 2.

2.3.2.3 Potential Pathways of Exposure and Receptors

2.3.2.3.1 Air

The volatile organic compounds previously stored on-site will have been removed prior to initiating the RI field studies. Therefore, no major sources of air contamination are expected to be encountered as long as the site remains in its present undisturbed state. Nevertheless, a hand-held anemometer will be used at the site to monitor wind speed and direction during field investigations. In addition, a portable photoionization detector (PID) will be used to periodically monitor the air at various locations around the site.

2.3.2.3.2 Soil

No quantitative data are available on soil contamination at the site. However, potential soil contamination is suggested by the following:

- o Alleged spills of chemicals reported during several site inspections by NJDEP;
- o Localized soil discoloration and/or staining;
- o The presence of apparent sludge deposits.

It appears unlikely that on-site soil contamination will pose a significant threat to the public traveling on the adjacent roadways or working in the vicinity of

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the site. However, contaminated soil could possibly pose a risk to personnel working on-site without protective gear as a result of dust inhalation, particularly during soil excavation. Furthermore, contaminated soil may contribute to the contamination of ground water.

2.3.2.3.3 Ground Water

No data are presently available on ground water contamination at the site. However, potential contamination of the ground water in the upper unconfined saturated zone is suggested by the following:

- Alleged spills of chemicals reported by NJDEP during several site inspections;

- The presence of seeps of discolored ground water discharging into Peach Island Creek;

- The permeable nature of the surficial fill and underlying meadow mats and sand, comprising the anticipated upper unconfined saturated zone.

Available data (Reference 4) indicate that a relatively impervious clay stratum underlies the upper saturated zone. Therefore, no significant migration of ground water is anticipated to the bedrock aquifer. However, the site stratigraphy will be confirmed during the RI. Available well logs indicate that several industrial wells drilled in the area extend into the bedrock aquifer, at depths greater than 150 feet. Telephone contacts with officials from the four communities surrounding the site (Carlstadt, East Rutherford, Moonachie and Wallington) indicate that the only known public water supply wells in the area are located in the Town of Wallington, at least two miles away from the site.

2.3.2.3.4 Surface Water

No quantitative data are available on the potential contamination of the Peach Island Creek water. However, contamination is suggested by the following:

000697

- The presence of seeps of discolored ground water discharging into the creek;
- Chemical analyses of sludge samples floating on the creek (Table 2);
- Underground pipes allegedly discharging into the creek; and
- Alleged spills into the creek observed during past inspections by NJDEP.

Available information (Reference 1) indicates Peach Island creek has been designated as Freshwater-2 (FW-2) by NJDEP (suitable for maintenance, migrations, and propagation of the natural ecosystem and support biota). It joins Berrys Creek Canal, which eventually discharges into the Hackensack River. The Hackensack River is used for recreational purposes and crabbing. There is no evidence that waters from the creeks and the river are used either for human consumption or irrigation purposes.

2.3.2.3.5 Stream Sediments

There are no quantitative data available on the potential contamination of sediments within Peach Island Creek. However, contamination is suggested by the same factors stated above for surface water. Contaminated sediments are not expected to pose a threat to public health. This will be investigated as part of Task 4.

2.3.3 History of Response Actions

Remedial response actions to date included:

- Discontinuing of all on-site operations;
- Dismantling of most structures; and
- Removal of all chemical-containing drums and tanks (with the exception of four tanks and a tank trailer containing PCB's).

000692

It was also reported by NJDEP (Robert Soboleski, telephone communication, July 19, 1985) that some apparently contaminated soil may have also been removed from the site by Inmar Associates, the site owners. However, no further information is available at this time.

2.3.4 Additional Considerations

In accordance with EPA requirements as part of the RI, the contractor will perform the following subtasks to complete Task 1:

1. A thorough collection of existing data in accordance with Chapter 2, Section 2.2 of the EPA RI Guidance Document (Reference 2).

2. A compilation of data on human and environmental receptors (e.g., plants and animals) in the area surrounding the site.

3. An evaluation of the potential impacts of hazardous substances at the site relative to the danger they pose to public health, welfare or the environment.

4. Development of possible general response actions (refer to Section 2.2, Reference 3).

5. Identification of data needs or limitations.

2.4 TASK 2 — PLANS AND MANAGEMENT

2.4.1 General

Due to the potential contamination, detailed, site-specific procedures must be established by the RI/FS contractor prior to the initiation of the field work. Therefore, the contractor will be required to develop the following plans for EPA approval:

000690

- Site Operations Plan (SOP)
- Health and Safety Plan (HASP)
- Quality Assurance/Quality Control (QA/QC) Plan
- Data Management Plan (DMP)

These plans will establish procedures to be implemented by the RI/FS contractor at the appropriate time prior to and during the performance of the work. The plans will be consistent with one another and will be prepared in conjunction with one another.

These plans will be developed in accordance with applicable EPA guidelines (References 2 and 3). The plans will address, at a minimum, all the subjects included in the following outlines.

Furthermore, the contractor will be required to provide EPA with technical support for EPA's development of the Community Relations Plan (CRP).

2.4.2 Site Operations Plan (SOP)

The purpose of this plan is to provide instructions and guidance for the coordination and performance of field activities. It is intended primarily to serve as a reference document for field personnel.

The SOP should include, at a minimum, the following information:

- Pertinent background information and objectives of the investigation;.
- Site description and project overview;
- Personnel organization and associated tasks;

000700

- Procedures for field investigations, surveys and other activities not covered by other plans, with schedules, schematics and flow diagram/ network, as appropriate;

- Procedures and protocols for classification, collection, storage/handling, transportation and disposal of contaminated materials. Although it is not anticipated that the transportation and disposal of materials will require manifesting, should such manifesting be required, it will be the responsibility of the RI/FS contractor or other person or entity designated by the PRP representatives.

- Equipment requirements and schedule on-site;

- Logistics.

2.4.3 Health and Safety Plan (HASP)

The purpose of the HASP is to protect the field investigation team and, if applicable, the surrounding community from potential hazards which may be encountered during the field investigations. The objectives of the plan are achieved by assigning responsibilities, establishing personnel protection standards and mandatory safety practices and procedures, and providing for contingencies that may arise while operations are being conducted at the site. The HASP will address, at a minimum, the following components:

- Pertinent background information, including site history and site conditions.

- Key personnel, assignment of responsibilities and strategy of compliance and implementation of the plan.

- Assessment of on-site hazards (physical and chemical), including permissible exposure limits or recommended threshold limit values, breakdown of

000701

component job functions, and an estimate of potential employee exposure to chemical and/or physical hazards.

- Assessment of off-site hazards that might result from on-site or off-site RI/FS activities and potential to expose the general public off-site to chemical and/or physical hazards.

- Air monitoring procedures for toxic vapors for selecting the appropriate levels of respiratory protection and providing an historical record of personal exposures.

- Medical surveillance for on-site workers employed by RI/FS contractor and any subcontractors and procedures and personnel for making decisions about medical acceptability of assigned workers or establishing criteria for ongoing medical surveillance.

- Worker site safety orientation, including refresher training details and schedules.

- Standard Safe Work Practices which the field staff must follow to prevent exposure to hazards.

- First aid, medical equipment, facilities, practices, and personnel.

- Personal protective clothing/equipment, respiratory protective devices and approval for each activity. Establishment of the specific criteria to select the level of protection, the decision process to change the level of protection and a program for the ongoing assessment of both respiratory and skin hazards.

- Work zone delineation and decontamination practices and facilities.

- Site security and procedures for controling access to the site.

000702

- Procedures to control releases of contaminated materials which may result from RI work.

- Emergency contacts and procedures, including emergency coordinators and their responsibilities, evacuation plan for on-site personnel, list of emergency equipment and their locations, arrangements with local first aid units, fire departments and hospitals.

- Recordkeeping and reporting requirements to document compliance with HASP and applicable OSHA regulations.

2.4.4 Quality Assurance/Quality Control (QA/QC) Plan

The purpose of the QA/QC Plan is to serve as a guideline so that technical data developed during the RI/FS are accurate, complete, valid, and representative of site conditions. To achieve this objective, the plan must provide guidance so that all field and laboratory analytical work is performed by qualified staff and in accordance with documented and approved procedures, including, at a minimum, the following:

2.4.4.1 Field Procedures

- Sampling procedures, including collection devices; prevention of cross contamination; rinsate sampling; field blanks; trip blanks; duplicate sets; decontamination procedures; sample storage, transport and preservation; and substances to be analyzed on all samples, blanks, duplicates, and rinsates.

- Chain-of-custody, including handling procedures for the field and laboratory and all required paper work.

- Internal QC, including sampling blanks, replicate analysis, duplicate samples, spike samples, sample splits, reagent checks, calibration samples, and personnel and function QC checks, as appropriate.

- QA systems and performance audits.

- Equipment calibration procedures, including standards used, description of calibration procedures and calibration certifications.

- Independent review and verification of field results.

- Reports to management, including data accuracy, precision, completeness, and results of performance and systems audits.

- Preventative maintenance for personal protection equipment, monitoring and sampling equipment, and support equipment.

- Nonconformance/corrective action.

- Information on specific sampling methodology, well installation and monitoring techniques.

- Other field procedures.

2.4.4.2 Chemical Analytical Procedures

All chemical laboratory work is to be performed in accordance with procedures published by the USEPA. To assure data quality goals of the project, the contractor shall develop a laboratory QA/QC Plan. The contractor's plan shall present in specific terms the policies, organization, objectives, and specific QA and QC activities. The QA provision will document test procedures, be representative of standard laboratory operations and provide clear evidence of the laboratory's capabilities to successfully fulfill all analytical and QA/QC requirements. Analytical Methods and Detection Limits described in Section 2.5.9 shall be followed.

To maintain confidence in the results of laboratory analysis, QC checks shall be employed. Their specific usage is dependent upon the substances involved.

000704

All QC checks employed shall be based upon EPA and industry recognized procedures. These procedures include a schedule of laboratory audits, performance evaluation samples, e.g., the use of replicates, blanks, spiked samples, split samples, QC samples and surrogate samples.

If the contractor subcontracts laboratory services, the subcontractor must be acceptable to the PRP representatives, approved by EPA, and shall be subject to all QA/QC requirements. The Contractor shall verify the qualifications of laboratories and that the laboratories shall employ quality assurance programs to be in compliance with specific procedures used to assess data precision, accuracy, and completeness. The procedures used will provide for data review and will document data consistency. All references, technical concepts, method verification methods, assumptions, calculations, conclusions, and required internal laboratory QA/QC procedures and reporting will be scientifically sound and defensible.

2.4.5 <u>Data Management Plan (DMP)</u>

The purpose of the DMP is to provide guidelines and procedures for documenting and tracking all aspects of the investigation so that the quality and integrity of the information generated are maintained for future use or reference, as required.

The contractor shall prepare a DMP which will include at a minimum the following information:

- o Procedures for documenting technical data, including field data and data resulting from subsequent laboratory analyses or engineering evaluations.
- o Procedures for monitoring, managing and documenting the actual performance of the RI tasks, including schedules, cost estimates, technical progress reports and financial management reports.
- o Project file requirements.

000705

2.4.6 Community Relations Plan (CRP)

EPA Region II will prepare a CRP for this project. The contractor will be required to provide reasonable technital support as needed by the EPA to establish the plan.

2.4.7 Institutional Issues

Contractor responsibilities regarding institutional issues such as obtaining permits, approvals, etc. are discussed in more detail in Section 2.5.1.

2.5 TASK 3 — SITE INVESTIGATIONS

The objective of the site investigations is to obtain information that will be used to:

- o characterize the site with regard to its potential hazards, if any, to public health, welfare and the environment;
- o evaluate the need for and extent of remedial actions;
- o assess the feasibility of remedial alternatives.

To accomplish the above objectives, the scope of work of this task will include the following subtasks:

1. Acquisition of Permits and Authorizations
2. Site Survey
3. Geophysical Survey
4. Soil Sampling
5. Hydrogeologic Investigation
6. Stream Water and Sediment Sampling
7. Related Laboratory Analytical Work

000705

These subtasks are described in detail below.

2.5.1 Permits and Authorizations

The contractor shall obtain all permits, licenses, approvals, certificates and authorizations that may be required for the execution of the work as defined herein. The contractor shall comply with applicable federal, State and local laws, ordinances, codes, rules and regulations relating to the performance of the work.

Right-of-entry to the site will be obtained by the EPA. Right-of-entry to other sites, if required, will be obtained either by the EPA or the contractor, or by both, in a cooperative effort, as appropriate.

2.5.2 Site Survey and Map

2.5.2.1 Site Survey

The contractor shall perform a survey using accepted surveying methods and equipment to establish the site boundaries. The survey shall be performed by a New Jersey licensed surveyor. All survey notes shall be added to the project files. The contractor shall establish one permanent and as many temporary benchmarks or references as may be required for performance of the survey. These benchmarks or references shall be tied to the National Geodetic Vertical Datum (NGVD) datum and to the New Jersey and USGS reference systems.

The surveyor shall establish a 50-foot x 50-foot grid or coordinate system over the entire surface of the site and stake or otherwise mark the corners of each grid. This grid system shall be used for horizontal control of all field activities and corresponding plans.

2.5.2.2 Site Map

The contractor shall prepare a base map which will include the site and the surrounding area to a distance of at least 100 feet beyond the property boundaries,

000707

including Peach Island Creek. The map shall indicate property boundaries, topography, roadways, buildings, structures, drainage patterns, debris mounds, pits, lagoons, tanks, utilities, fences, paved areas, easements, right-of-ways, and any other pertinent features. The map shall be prepared at a horizontal scale of one inch equals 20 feet and a vertical contour interval of one foot. A grid and/or coordinate system for the entire site consistent with the grid described under Section 2.5.2.1 shall also be included on the map.

2.5.3 Geophysical Survey

The objectives of the geophysical survey are to:

- o Locate any buried metal debris, such as drums, tanks, etc.;
- o Estimate the extent of contaminant plumes, if any;
- o Obtain additional site-specific stratigraphic data.

The geophysical survey shall consist of the following:

2.5.3.1 Magnetometer Survey

A proton magnetometer will be used to locate buried ferromagnetic objects, such as drums and tanks. Survey lines will be spaced 10 feet apart. If required, additional lines shall be run to acquire additional data. The survey will be performed under the supervision of a qualified geophysicist, who will also interpret the data. The results of the magnetometer survey may be used, with the approval of the PRP designated Facility Coordinator (FC), to modify proposed boring, well and soil sampling locations.

2.5.3.2 Conductivity Survey

A conductivity survey will be performed to estimate the extent of contaminant plumes, if any. The conductivity survey shall employ a Geonics EM-31 or equivalent system which will be operated on a continuous profiling mode. Survey lines shall be spaced 20 feet apart. If required, additional lines shall be run to acquire additional data. Station locations, grid spacing and profiling lines may be modified in the field, if deemed appropriate by the geophysicist.

The survey will be performed under the supervision of a qualified geophysicist, who will also interpret the data. The results of the conductivity survey may be used, with the approval of the FC and EPA, to modify the locations of proposed borings and monitoring wells.

2.5.3.3 Refraction Survey

If the boring data indicate variable stratigraphic conditions at the site, such as absence of the clay or till strata in one or more borings, the need for a refraction survey to provide additional stratigraphic data should be evaluated by the contractor, the FC and the EPA.

2.5.4 Waste Characterization

It is anticipated that the four tanks and one tank trailer presently remaining on-site and reportedly containing PCB's will be removed by others prior to the initiation of the RI field program. Therefore, waste characterization will be required only for potentially contaminated soil and water as described in subsequent sections. A waste characterization plan will be required if any buried drums, tanks, or other containers or wastes are discovered during the RI.

2.5.5 Soil Sampling

Soil samples for stratigraphic corelation and chemical analyses will be collected at 15 locations throughout the site (Figure 4) as indicated in Sections 2.5.5.1 and 2.5.5.2 below. Most soil samples will be collected in the monitoring well and piezometer borings. Test pits or shallow hand-augered borings will be used to obtain samples at locations where borings for piezometers or monitoring wells will not be drilled. All shallow borings will be sampled continuously to the ground water table. Subsequent sampling will be on a five-foot interval and at every major lithologic change. Deep borings will be sampled continuously to the top of the bedrock.

A total of 36 soil samples will be collected for chemical analysis at various locations and depths throughout the site (Figure 4). A total of 30 samples will be collected from the unsaturated zone. The remaining six samples will be collected from the saturated zone. Soil sampling for chemical analysis is described in more detail below.

2.5.5.1 Unsaturated Zone

To estimate the lateral and vertical extent of contamination, if any, within the unsaturated zone, two samples will be collected at each of the following 15 locations (Figure 4):

- o The three deep wells (MW-2D, MW-5D and MW-7D).
- o The four shallow wells not located adjacent to the three deep wells (MW-1S, MW-3S, MW-4S, and MW-6S).
- o The four shallow piezometers (P-1, P-2, P-3 and P-4).
- o The former sludge pit area.
- o The tank farm.
- o Two potentially contaminated locations to be selected in the field by EPA and Committee on-site coordinators.

The first sample within the unsaturated zone will be collected at a depth of one to two feet. The second sample will be collected at a depth of four to five feet or approximately one foot above the ground water table, whichever is greater.

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2.5.5.2 Saturated Zone

For stratigraphic correlation, the three borings to be drilled for the installation of the deep wells (Figure 4) will be sampled continuously to the top of the bedrock. To assess whether contamination, if any, has migrated vertically into the suspected low-permeability saturated zone (clay and/or till), two soil samples from each of the three deep borings (total six samples) will be submitted to the laboratory for chemical analysis as shown on Table 3. The samples will be collected at the top and bottom of the clay layer (or the till layer, if the clay is absent). All soil samples will be tested in the field for the presence of volatile organic compounds using a portable PID meter. The results may be used to estimate the extent of contamination, if any.

2.5.6 Hydrogeologic Investigation

2.5.6.1 Rationale

Based upon the available stratigraphic and regional geohydrologic data, it appears that the zone having the most susceptibility to receiving contamination at the site is the shallow surficial zone consisting primarily of miscellaneous fill, meadow mats, and sand. The surficial zone is reported (Reference 4) to be underlain by a layer of low permeability lacustrine silty clay which would act as a barrier to contaminated water migrating downward to the bedrock aquifer. Based upon the range of reported permeability values (10^{-6} to 10^{-7} cm/sec) and a possible range of hydraulic gradients across the clay layer (0.01 to 1.0), there appears to be a low probability that contaminated water, if any, has percolated through the clay layer. This hypothesis should be verified by appropriate hydrogeologic investigations, including: a) separate monitor wells in the shallow fill zone and in the glacial till layer (or bedrock); and b) permeability testing of the clay layer.

2.5.6.2 Shallow Monitoring Wells (Surficial Zone)

Seven shallow 4-inch diameter monitoring wells shall be installed at the approximate locations shown on Figure 4. These locations may be modified based on

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the results of the geophysical surveys, as discussed in Section 2.5.3.1. Provided that stratigraphic conditions are as described earlier, the wells will be screened from about two feet above the water table to the top of the underlying clay stratum.

2.5.6.3 Deep Monitoring Wells (Glacial Till)

Three deep monitoring wells shall be installed at the approximate locations shown on Figure 4, at a distance of about 10 feet from adjacent shallow wells. Provided that stratigraphic conditions are as described earlier, the wells will extend to the top of the bedrock and will be screened through the lower 15 feet of the glacial till stratum, or through the entire thickness of the stratum, whichever is less. If either the till or clay units are absent, the well will be screened in the bedrock. Wells will be constructed so as to prevent leakage of potentially contaminated water from the shallow to the deep aquifer.

2.5.6.4 Slug or Injection Tests

Slug or injection tests will be conducted in each of the seven shallow monitor wells to estimate the permeability of the upper saturated zone. These data will be used in conjunction with the water levels and hydraulic gradients to estimate geohydrologic conditions at the site.

2.5.6.5 Ground Water Level Elevation Measurements

Ground water level elevation measurements will be performed at weekly intervals for a period of four weeks in each of the ten (10) monitoring wells. These measurements may be taken in conjunction with other tasks, such as the slug tests or ground water sampling. The first measurement shall be taken no less than 48 hours following the installation and development of the wells. To supplement ground water elevation data, four shallow 2-inch piezometers will be installed in the upper saturated zone (Figure 4). The piezometers will be installed prior to the installation of the wells and will be read at least twice a day during subsequent field investigations (drilling, well installation and ground water sampling). All measurements shall

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be to the nearest 0.01 foot. Water level recorders should be installed in one of the well pairs adjacent to the stream to investigate tidal influence on the aquifer. Continuous measurements shall be recorded over a four week period. Measurements should be correlated to a tidal staff installed at the site and read periodically. Ground water elevation maps will be prepared for each complete round of elevation measurements.

2.5.6.6 Ground Water Sampling

2.5.6.6.1 Monitoring Wells

Ground water samples from the 10 monitoring wells will be collected in two rounds: the first round will be collected five to ten days following the installation and development of the wells. The second round will be collected approximately eight weeks later, after the analytical results of the first round samples are available. No ground water samples for chemical analysis will be collected from the piezometers.

The analytical program for the ground water samples is described in Section 2.5.9 and graphically shown on Table 3.

2.5.6.6.2 Ground Water Seeps

Two ground water seeps discharging into Peach Island Creek were observed during a site visit on July 8, 1985 (Figure 5). Water emanating from these seeps appeared to be discolored and formed a sheen on the surface of the stream water. One seep was adjacent to an apparently dried up sludge pit.

If still present during the field investigations, these seeps will be sampled twice, if feasible, at low tide, when there is no surface runoff from a recent rainfall event. The samples will be analyzed for the same parameters as the monitoring well samples.

000717

2.5.7 Stream Water and Sediment Sampling

2.5.7.1 Stream (Surface) Water

Two rounds of stream water samples will be collected. Each round will consist of three samples collected at points located approximately 150 feet upstream and downstream of the site boundaries, and one point approximately at the mid-point of the site (Figure 6).

To minimize interference from Berrys Creek, the samples will be collected during a period of low tide. In addition, to minimize interference and dilution from surface runoff, the samples will be collected during a period of low stream flow. The stream sampling will be scheduled to coincide with the ground water sampling events. The analytical program for the stream water samples is described in Section 2.5.9 and is also shown on Table 3.

2.5.7.2 Stream Sediments

One round of sediment samples will be collected at the same locations and at the same time as the Round I stream water samples. The analytical program for the stream sediment samples is described in Section 2.5.9 and is shown on Table 3.

2.5.8 Underground Pipes

NJDEP reported the existence of an underground pipe exposed along the bank of the creek. The contractor will make a visual inspection to locate the pipe(s) and sample the discharge, if any. Discharge will be analyzed for the same parameters as the ground water seeps.

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2.5.9 Analytical Program

2.5.9.1 Parameter Selection

The selection of parameters for analytical determination was based on a review of historical inventories (Appendix A), the data provided in the RAMP (Reference 1), and EPA Region II requirements. All soil, sediment, surface water and Round I ground water samples will be analyzed for the EPA priority pollutants and total petroleum hydrocarbons. Round II ground water samples will be analyzed only for those groups of parameters (i.e., volatiles, base/neutral extractables, PCB's, etc.) detected in at least one Round I ground water sample. In addition to the above parameters, all water samples will be analyzed for pH, acidity/alkalinity and specific conductance. The analytical requirements are summarized in matrix form on Table 3.

2.5.9.2 Methods and Detection Limits

Water and soil samples for organic contaminant analysis will be prepared and then analyzed by gas chromatography/mass spectrometry (GC/MS) in accordance with the following EPA procedures (Reference 9):

- Volatile Compounds - Method 624
- Acid Extractable Compounds - Method 625
- Base/Neutral Extractable Compounds - Method 625
- PCBs and Pesticides - Method 608

Contract required detection limits are listed in Table 4.

Heavy metals will be determined by atomic adsorption spectrophotometry using the EPA procedures (Reference 9) shown in Table 5.

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As an alternative to atomic adsorption spectrophotometry, the contractor may use the inductively coupled argon plasma (ICAP) technique proposed as EPA Method 6010 (Reference 9). The ICAP method may be used only if the performing laboratory can demonstrate to EPA satisfactory experience in using this technique and that required detection limits can be met.

Samples subjected to cyanide will be analyzed in accordance with Method 335.2 (Reference 9). The contract required detection level is 10 ug/l.

Petroleum hydrocarbons will be analyzed in accordance with USEPA document 600/4-79-020.

2.6 TASK 4 — SITE INVESTIGATION ANALYSIS

The purpose of this task is to assess whether the RI has produced data sufficient in quantity and quality to support the feasibility study. Therefore, the contractor shall perform a thorough analysis of all site investigations and their results. The analysis will include, at a minimum, the following:

- Define environmental conditions/setting of the site;
- Identify the contaminants, if any, on the site and in the ambient surroundings in terms of quantities and concentrations;
- Develop flow patterns and directions of ground water movement;
- Delineate the extent of surface water, ground water, soil and sediment contamination, if any;
- Identify the pathways that may result in an actual or potential threat to public health, welfare, or the environment;

000716

- Model the fate, movement or spread of the contamination, if any, in various pathways (elaborate or sophisticated modeling may not be required);

- Confirm contaminant pathways and receptors of concern (numbers, types, distances, etc.), if any;

- Develop or provide suitable data for a risk assessment, modeling studies and development of remedial measures; and

- Evaluate potential impacts to public health, welfare, and the environment and identify preliminary remedial alternatives; and

- Recommend additional investigations, if required.

2.7 TASK 5 — LABORATORY AND BENCH-SCALE STUDIES

(Note: The following applies only when additional studies are necessary to provide data to fully evaluate remedial alternatives.)

Conduct laboratory and/or bench-scale studies to determine the applicability of remedial technologies to site conditions and problems. Analyze the technologies, based on literature review, vendor contacts, and past experience to determine the testing requirements.

Develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and data management and interpretation guidelines for submission to EPA for review and approval.

Upon completion of the testing, evaluate the testing results to assess the technologies with respect to the site-specific questions identified in the test plan. Scale up those technologies selected based on testing results.

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Prepare a report summarizing the testing program and its results, both positive and negative.

2.8 TASK 6 — REMEDIAL INVESTIGATION REPORTS

2.8.1 Progress Reports

Monthly progress reports shall be prepared by the Contractor to describe the technical and financial progress of the project. These reports should discuss the following items:

- Identification of site and activity;
- Status of work at the site and progress to date;
- Percentage of completion and schedule status;
- Difficulties encountered during the reporting period;
- Actions being taken to overcome difficulties;
- Activities planned for the next month;
- Changes in personnel;
- Actual expenditures and direct labor hours expended for this period;
- Cumulative expenditures and cumulative direct labor hours;
- A projection and graphic representation of proposed versus actual expenditures and comparison of actual versus target project costs. A projection to completion will be made for both.

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The monthly progress report will list target and actual completion dates for each element of activity, including project completion, and will provide an explanation of any deviation from the milestones in the work plan.

2.8.2 Draft Report

Upon completion of the field investigations, laboratory analyses and data reviews and analyses, the contractor shall prepare a draft RI report. This report shall characterize the site and summarize the data collected and conclusions drawn from all investigative areas and levels. The format of the report will be designed to:

- o Ensure that all major issues are adequately addressed;
- o Produce presentation according to EPA guidelines;
- o Promote a high quality RI report;
- o Ensure adequate documentation and complete data for use in decision-making;
- o Consolidate data from several investigations into a single presentation; and
- o Maintain continuity, coherence, clarity, and consistency among various sections of the text, figures and tables.

If appropriate, this report may be combined with the associated Feasibility Study Report to provide one site report containing both support data and decision-making documentation.

2.8.3 Final Report

A final report will be prepared and the required number of copies will be submitted to the PRP representatives.

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2.9 TASK 7 — COMMUNITY RELATIONS SUPPORT

EPA will conduct a community relations program. The contractor will be required to provide reasonable technical support, as needed by the EPA.

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3.0 FEASIBILITY STUDY

3.1 PURPOSE

The purpose of this remedial action feasibility study (FS) is to develop and evaluate remedial alternatives for the SCP site in Carlstadt, New Jersey. The contractor will furnish the necessary personnel, materials and services required to conduct the FS based on evaluation of data collected during the remedial investigation (RI). The contractor shall use appropriate EPA documents for guidance, including the FS guidance document under CERCLA (Reference 3).

3.2 SCOPE OF WORK

The scope of work for the feasibility study will consist of the following tasks:

Task 8	Remedial Objectives and Preliminary Remedial Technologies
Task 9	Development of Alternatives
Task 10	Initial Screening of Alternatives
Task 11	Evaluation of Alternatives
Task 12	Preliminary Report
Task 13	Final Report

3.3 TASK 8 — REMEDIAL OBJECTIVES AND PRELIMINARY REMEDIAL TECHNOLOGIES

The contractor shall establish specific remedial action objectives and identify potentially feasible remedial technologies based primarily upon the information collected during the RI. Basic considerations will include:

- o Existing and potential hazards to public health, welfare, and environment; extent of contamination and major pathways of migration.

- o Applicable EPA standards, guidance or advisories as defined under EPA's CERCLA compliance policy.

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- Section 300.68 of the National Contingency Plan (NCP).

- General response actions, e.g., handling, disposal, controls, containments, treatment, removal, interim measures, storage, etc. which have been successfully used in similar situations. "No Action" should be a part of this consideration.

- Identification and screening of feasible technologies for each general response action identified. Screening shall be based on site conditions, waste characteristics and technical development to eliminate or modify those technologies that may prove extremely difficult to implement, will require unreasonable time periods, or will rely on insufficiently developed technology.

The results of this task may be requested as a separate memorandum.

3.4 TASK 9 — DEVELOPMENT OF ALTERNATIVES

Based on the chosen technologies and remedial objectives, the contractor shall develop alternatives for source control and/or off-site remedial actions.

The alternative may include:

- Source control measures which seek to completely remove, stabilize, and/or contain the hazardous substances, if any, in order to prevent or minimize migration of contaminants from the source material;

- Management of migration measures if hazardous substances have migrated from the original source of contamination and poses a significant public health and/or environmental threat. Particular consideration should be given to technologies that permanently contain, immobilize, destroy, or recycle contaminants.

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In case off-site disposal is contemplated, an inventory of disposal facilities permitted to handle the wastes should be developed, which would also include their location, permits, disposal procedures and transport requirements.

The contractor shall develop a matrix which would identify alternatives that fall into one or more of the following categories:

- Alternatives specifying off-site storage, destruction, treatment, or secure disposal of hazardous materials at a facility approved under the Resource Conservation and Recovery Act (RCRA). Such a facility must also be in compliance with all other applicable EPA standards (e.g., Clean Water Act, Clean Air Act, Toxic Substances Control Act).

- Alternatives that attain all applicable or relevant Federal public health or environmental standards, guidance, or advisories.

- Alternatives that exceed all applicable or relevant Federal public health and environmental standards, guidance, and advisories.

- Alternatives that meet the CERCLA goals of preventing or minimizing present or future migration of hazardous substances and protect human health and the environment, but do not attain the applicable or relevant standards. (This category must include an alternative that closely approaches the level of protection provided by the applicable or relevant standards).

- No action.

3.5 TASK 10 — INITIAL SCREENING OF ALTERNATIVES

This screening serves as an initial assessment of the applicability of each alternative relative to others. The contractor will develop screening criteria for this purpose; a screening matrix approach may be used. The screening will eliminate

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alternatives that do not meet these criteria. When alternatives are eliminated from further consideration the feasibility study must document the rationale for excluding each alternative.

The three primary factors that will be addressed in the screening process are environmental effects, engineering characteristics, and cost. As an initiation to the screening process, criteria for each of these factors will be identified. In general, it is expected that the following would be among the criteria that would be selected for the screening process:

- Environmental Effects
  - Future site use
  - Potential health/environmental impacts during and after construction
  - Public acceptance
  - Degree of remediation achieved
  - Degree of mitigation of danger to public and the environment
- Engineering
  - Status of technology
  - Technical feasibility in terms of site conditions
  - Constructibility
  - Effort required for design approval
  - Implementation schedule

- Risk of failure

- Economics

    - Capital cost

    - Operation and maintenance cost

    - Cost certainty

The cost screening will be conducted only after the environmental and public health screenings have been performed.

3.6 TASK 11 — EVALUATION OF ALTERNATIVES

3.6.1 Develop Alternatives

Each alternative passing the initial screening will be developed in sufficient detail to allow comparative technical assessment. This task includes the following components:

- Refine the alternatives and specify major logistical, equipment, and utility requirements. Use of established technologies will be emphasized.

- Prepare a basic component diagram.

- Define operation and maintenance/monitoring requirements.

- Define implementation requirements, including safety considerations, regulatory and permit requirements, temporary storage, off-site disposal and transportation.

- Prepare a conceptual site layout drawing.

- Develop a schedule for implementation and address phasing and segmenting options.

- List potential adverse environmental impacts; describe methods to mitigate those impacts and costs of mitigation.

- Describe whether the alternative results in permanent treatment or destruction of wastes, and if not, the potential for future release to the environment; describe methods and costs to mitigate this potential.

3.6.2 Detailed Analysis

The data developed in this subtask will be used in conjunction with data developed as part of the screening effort and data from the RI to form the basis for the compilation of assessments in five areas - technical, environmental, public health, institutional, and cost.

3.6.2.1 Technical Assessment

The technical analysis will include as a minimum:

- A description of appropriate treatment, storage, and disposal technologies.

- A discussion of how the alternative does (or does not) comply with specific requirements of other environmental programs. When the alternative does not comply, discuss how the alternative prevents or minimizes the migration of wastes and public health or environmental impacts and describe special design needs that could be implemented to achieve compliance.

- Operation, maintenance, and monitoring requirements of the remedy.

- Identify and review potential off-site facilities to ensure compliance with applicable Resource Conservation and Recovery Act (RCRA) and other

EPA environmental program requirements, both current and proposed. Potential disposal facilities should be evaluated to determine if off-site management of site wastes could result in the potential for a future release from the disposal facility.

- Temporary storage requirements, off-site disposal needs, and transportation plans.

- A description of whether the alternative results in permanent treatment or destruction of the wastes and, if not, the potential for future release to the environment.

- Safety requirements for remedial implementation (including both on-site and off-site health and safety considerations).

- A description of how the alternative could be phased into individual operable units. The description should include a discussion of how various operable units of the total remedy could be implemented individually or in groups, resulting in a significant improvement to the environment or savings in costs.

- A description of how the alternative could be segmented into areas to allow implementation of differing phases of the alternative.

- A description of special engineering requirements of the remedy or site preparation considerations.

3.6.2.2 Environmental Assessment

The Environmental Assessment (EA) for each alternative shall focus on the site problems and pathways of contamination, if any, actually addressed by each alternative. The EA for each alternative will include, at a minimum, an evaluation of beneficial effects of the response, adverse effects of the response, and an analysis of measures to mitigate adverse effects. The no-action alternative will be fully evaluated to describe the current site situation and anticipated environmental conditions if no actions are taken. The no-action alternative will serve as the baseline for the analysis.

3.6.2.3 Public Health Assessment

Each alternative will be assessed in terms of the extent to which it mitigates long-term exposure to any residual contamination and protects public health both during and after completion of the remedial action. The assessment will describe the levels and characterizations of contaminants, if any, potential exposure routes, and potentially affected population. The effect of "no action" should be described in terms of the short-term effects, long-term exposure to hazardous substances, and resulting public health impacts. Each remedial alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. The relative reduction in public health impacts for each alternative will be compared to the no-action level. For off-site measures, the relative reduction in impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA. For source control measures, or when criteria, standards, or guidelines are not available, the comparison should be made based on the relative effectiveness of technologies. The no-action alternative will serve as the baseline for the analysis.

3.6.2.4 Institutional Assessment

Each alternative will be evaluated based on relevant institutional needs that may apply. Specifically, regulatory requirements, permits, community relations, and participating agency coordination will be assessed.

3.6.2.5 Cost Assessment

The cost of each feasible remedial action alternative (and for each phase or segment of the alternative) will be evaluated. The cost will be presented as a present worth cost and will include the total cost of implementing the alternative and the annual operating and maintenance costs. Both monetary costs and associated nonmonetary costs will be included. A distribution of costs over time will be provided.

After the completion of the technical, environmental, public health, institutional and cost assessments, the alternatives will be ranked within each assessment category and an overall ranking will be formulated for each alternative. The primary goal of this ranking will be to provide a basis to identify the cost-effective remedial alternative. The cost-effective remedial alternative is usually characterized as the lowest cost alternative that is technologically feasible and reliable, and that adequately protects public health, welfare, and the environment. The rankings of each alternative within each assessment category and the overall ranking will be based on the professional judgment of a qualified staff of engineers and scientists.

3.7 TASK 12 — PRELIMINARY REPORT

A preliminary draft report will be prepared following the completion of the evaluation of remedial action alternatives. The report will discuss both the methods and results of the following activities:

- o Choice of preliminary remedial technologies and development of alternatives.
- o Initial screening of alternatives.
- o Evaluation of alternatives.
- o Comparative ranking of alternatives.

3.8 TASK 13 — FINAL REPORT

A final report will be prepared and the required number of copies will be submitted to the PRP representatives.

TABLE 1 (continued)

	Owner	Address	Date Drilled	Surface Elevation (ft. MSL)	Well Depth (ft.)	Static Water Level (ft.)	Depth to Bedrock (ft.)	Well Use
40.	J.J. Josephson Inc.	35 Empire Blvd. South Hackensack, NJ	06-23-75	10	500	62	N /A	Cooling*
41.	Leo Van Der Wall	Farm Road Secaucus, NJ	12-26-51	N /A	200	5	163	Industrial
42.	Old Mill Restaurant	300 Millridge Road Secaucus	06-81	N /A	250	15	30	Public Supply/ Human Consumption
43.	Food Fair Stores, Inc.	Scheyler Avenue & Belleville Pike	12-10-56	100	303	42	N /A	Air Conditioning
44.	Stella Doro Co., Inc.	Washington Ave. Carlstadt, NJ	12-27-65	N /A	120	12	N /A	Industrial*
45.	Meadowlands Commission (8 wells)	200 Murray Hill Parkway Fairfield Borough	7-26-84	N/A	11.5-27.5	2.5-13	N/A	Observation
46.	Alpha Refining Co.	Route #3 East Rutherford, NJ	2-15-49	N/A	400	6	N/A	N/A
47.	TruBeck Laboratories	Route 17 East Rutherford, NJ	6-49	10	140	6	N/A	Manufacturing
	TruBeck Laboratories	Route 17 East Rutherford, NJ	1-30-53	5	144	10	N/A	Industrial
	TruBeck Laboratories	Route 17 East Rutherford, NJ	11-25-52	5	150	N/A	N/A	Test Well
48.	Caughey's	64 Hoboken Road East Rutherford, NJ	8-14-51	10	276	25	201	Cooling
49.	Belle Mead Development Corp.	State Highway S-3 Rutherford, NJ	9-17-48	N/A	416	10	330	Industrial
50.	Marathon Enterprises	East Union Avenue Rutherford, NJ	2-10-80	18	242	14	N/A	N/A
51.	Felix Cascello	Moonachie	10-18-	100	160	30	96	Industrial/Sanitary
52.	Cosan Chemical Corp. (5 wells)	Paterson Plank Road Carlstadt, NJ	3-28-85	N/A	2.3-4	N/A	N/A	Monitoring

TABLE 1 (continued)

	Owner	Address	Date Drilled	Surface Elevation (ft. MSL)	Well Depth (ft.)	Static Water Level (ft.)	Depth to Bedrock (ft.)	Well Use
53.	World Plastic Extruders, Inc.	150 W. Commercial Avenue Moonachie, NJ	9-12-66	N/A	200	40	53	Industrial
54.	Eugene J. Bercak B&B Farm	199 Moonachie Road. Moonachie, NJ	8-3-71	N/A	120	8	30	No longer in business
55.	Hackensack Water Co.	Moonachie, NJ	6-27-55	N/A	243	23	238	Observation*
56.	Hackensack Water Co.	Carlstadt, NJ	2-55	N/A	86	15	N/A	Observation*
57.	Benedict Packing Corp.	590 Commercial Avenue Carlstadt, NJ	11-6-64	20	153	34	27	Cooling
58.	Hackensack Meadowlands (7 wells)	200 Murray Hill Parkway East Rutherford, NJ (location: Kingsland Park *Landfill Extension)*	3-3-82	N/A	17-21	5-11	N/A	Observation
59.	Hackensack Meadowlands	Paterson Plank Road Carlstadt, NJ	8-54	5	103	N/A	N/A	N/A

Reference: New Jersey Department of Environmental Protection, Division of Water Resources, Well Records.

Notes:

1. N/A = Not Available

2. Well Nos. 22, 23, 45, 47, and 52 are screened in the Quaternary Aquifer.
   All remaining wells produce water from the Triassic Brunswick Formation Bedrock Aquifer.

3. * = Data still to be confirmed.

TABLE 2

POLLUTANT CONCENTRATIONS FOUND IN SAMPLES COLLECTED AT SCP SITE, CARLSTADT, NEW JERSEY

Substance	Sludge Floating on Peach Island Creek (ppb)	Sludge on Creek Ice* (ppm)	Spills Near Thin-Film Evaporator (ppm)
Benzene	42	5.0	650
Chloroform	250	—	—
Methyl Ethyl Ketone	—	52.0	800
Styrene	—	4.0	50
Tetrachloroethylene	45	12.0	200
Toluene	1,250	8.8	1,800
Trichloroethane	—	4.3	400
Trichloroethylene	200	26.0	400
m-xylene	420	8.4	210
o-xylene	175	1.16	66

*Peach Island creek Partially Frozen Over.

Source: Cahayla-Wynne and Tan, January 19, 1979, in Reference 1.

4.0 SCHEDULE

A proposed tentative schedule to conduct the RI/FS work is presented on Figure 6.

5.0 LIST OF REFERENCES

1. Remedial Action Master Plan (Draft), Scientific Chemical Processing Site, Carlstadt Township, Bergen County, New Jersey. EPA Work Assignment No. 01-2V65.0, Contract No. 68-01-6699, prepared by Resource Applications, Inc. under subcontract to NUS Corporation. RAI Project No. 830431-01, NUS Project No. 0701.30, January 1984.

2. Guidance on Remedial Investigations Under CERCLA, USEPA, May 1985.

3. Guidance on Feasibility Studies Under CERCLA, USEPA, April 1985.

4. The New Jersey Sports Complex, Detailed Investigation of Subsurface Conditions, prepared by Frederic R. Harris, Inc. for the New Jersey Sports and Exposition Authority, October 1972.

5. U.S. Geological Survey, Appraisal of Water Resources in the Hackensack River Basin, New Jersey. Water Resources Investigations, 76-74.

6. New Jersey Department of Environmental Protection, Division of Water Resources, Miscellaneous Well Records, Carlstadt, New Jersey and Vicinity.

7. Dunlap, D. V., 1967. "The Climate of New Jersey" in: Climate of the States — A Practical Reference. Climatological Data of the United States, Vol. 1, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Washington, D.C.

8. Farnsworth, R. K. and E. S. Thompson, 1982, Mean Monthly Seasonal and Annual Pan Evaporation for the U.S. NOAA Technical Report, NWS 34, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Washington, D.C.

9. Federal Register, Part VIII, Environmental Protection Agency, 40 CFR Part 136, October 26, 1984.

TABLE 1

WELL DATA

VICINITY OF SCP SITE
CARLSTADT, NEW JERSEY

	Owner	Address	Date Drilled	Surface Elevation (ft. MSL)	Well Depth (ft.)	Static Water Level (ft.)	Depth to Bedrock (ft.)	Well Use
1.	Vikeship Co.	299 Murray Hill Parkway East Rutherford, NJ	5-19-66	N /A	223	42	41	Lawn Watering
2.	Marijon Dying and Finishing Co. Inc.	219 Murray Hill Parkway East Rutherford, NJ	4-18-81	N /A	410	16	115	Not Used
3.	Trubeck Chemical Co.	Route 17 East Rutherford, NJ	3-10-58	N /A	205	20	N /A	Industrial Plant Cooling
4.	Marijón Piece Dye	Manor Road East Rutherford, NJ	7-1-65	5	285	50	N /A	Cooling
5.	Becton & Dickinson Co.	Route 17 East Rutherford, NJ	8-1-66	15	363	50	N /A	Industrial/ Cooling/ Human Consumption (tested monthly)
6.	Insulating Fabricators Inc.	150 Union Avenue East Rutherford, NJ	8-31-64	30	300	60	62	Air-Conditioning*
7.	Spear Packing Corp.	95 Broad St. Carlstadt, NJ	10-28-79	16	330	18	162	Cooling
	Spear Packing Corp.	95 Broad St. Carlstadt, NJ	01-25-81	28	300	17	130	Industry/ Food Processing (tested quarterly)
8.	Carmet Manufacturing Co.	120 East Union Ave. East Rutherford, NJ	01-20-65	10	200	40	41	Cooling
9.	United States Prting Ink Co.	Union Street East Rutherford, NJ	01-23-65	15	220	35	158	Cooling*
10.	Top Notch Plating Co.	Route 20 East Rutherford, NJ	03-31-65	20	300	10	78	Industrial
11.	Yoo-Hoo Beverage Co.	600 Commercial St.	04-20-65	10	378	10	N /A	Industrial/ Cooling/ Food Processing
	Yoo-Hoo Beverage Co.	600 Commercial Street Carlstadt, NJ	05-01-64	10	393	10	N /A	Industrial/ Cooling/ Food Processing
12.	J.E.S. Corp.	400 Veteran Blvd. Carlstadt, NJ	07-02-81	34	153	28	31	Industrial
13.	Hermetite Division Universal Match	245 Paterson Plank Rd., Carlstadt, NJ	10-11-65	N /A	403	6	30	Industrial

TABLE 1 (continued)

	Owner	Address	Date Drilled	Surface Elevation (ft. MSL)	Well Depth (ft.)	Static Water Level (ft.)	Depth to Bedrock (ft.)	Well Use
14.	Royce Chemical Co.	River Road East Rutherford, NJ	4-25-59	N/A	378	10	N/A	Manufacturing
	Royce Chemical Co.	River Road East Rutherford, NJ	8-29-66	50	455	40	N/A	Industrial
15.	Royce Chemical Co.	Carlton Hill East Rutherford, NJ	5-67	50	370	20	45	Cooling
	Royce Chemical Co.	Carlton Hill East Rutherford, NJ	4-67	50	370	35	40	Cooling
	Royce Chemical Co.	Carlton Avenue East Rutherford, NJ	02-10-78	30	305	59	34	Industrial
	Royce Chemical Co.	17 Carlton Avenue East Rutherford, NJ	6-6-72	30	268	55	110	Cooling
16.	Ganes Chemical Works	611 Broad Street Carlstadt, NJ	2-9-48	80	826	44	53	Industrial
	Ganes Chemical Works, Inc.	611-641 Broad St. Carlstadt, NJ	8-21-69	79	430	28	N/A	Cooling
17.	Lester Entin Associates (used by Delsaco Foods)	24 McDermott Place Bergenfield, NJ (well at 164 Madison St. East Rutherford, NJ)	11-2-70	N/A	300	10	130	Industrial
	Lester Entin Associtės (used by Delsaco Foods)	24 McDermott Place Bergenfield, NJ (well at 164 Madison St. East Rutherford, NJ)	1-16-70	N/A	580	12	N/A	Food Processing (tested quarterly)
	Lester Entin Associates (used by Delsaco Foods)	164 Madison St. East Rutherford, NJ	9-15-71	25	470	12	140	Cooling
18.	A&A Electro Plating Co.	443 Garden St. Carlstadt, NJ	7-20-77	95	375	32	N/A	Cooling/Industrial
19.	DuBois Chemicals	Union Avenue East Rutherford, NJ	12-20-80	N/A	305	4	N/A	Cooling
20.	Carlton Cooke Corporation	Washington Avenue Carlstadt, NJ	9-6-54	500	255	15	N/A	Metal Plating

TABLE 1 (continued)

	Owner	Address	Date Drilled	Surface Elevation (ft. MSL)	Well Depth (ft.)	Static Water Level (ft.)	Depth to Bedrock (ft.)	Well Use
21.	Record Electrical Plating Co.	Broad Street Carlstadt, NJ	3-5-65	60	200	30	41	Industrial and Human Consumption (tested intermittently)
22.	U.O.P. Chemical (6 wells)	Route 17 Rutherford, NJ	4-1 to 4-3-80	N/A	5.5-13	0-5	N/A	Observation
23.	Mobil Oil Co. (9 wells)	41 River Road East Rutherford, NJ	4-73	15	15-52	N/A	N/A	Test for oil tank leak
24.	Bergen Iron & Engineering Co.	Route 17 Carlstadt, NJ	10-15-64	N/A	205	68	45	Industrial
25.	Lancaster Chemical Corp.	Broad Street Carlstadt, NJ	12-28-63	0	400	68	223	Industrial
26.	Manhattan Products Co.	Grand Street Carlstadt, NJ	10-20-85	15	300	26	80	Manufacturing Process Water
27.	Thumann, Inc.	670 Dell Road Carlstadt, NJ	4-10-81	10	300	22	42	Not Used
28.	Carter Mfg. Co.	55 Anderson Avenue Moonachie, NJ	3-1-81	18	202	12	142	Cooling
29.	Teaneck Chemical Co.	197 Washington Ave. Carlstadt, NJ	7-1-65	N /A	137	22	3	Industrial
	Teaneck Chemical Co.	197 Washington Ave. Carlstadt, NJ	08-31-66	N /A	193	21	13	Industrial
30.	Rutherford Invest. Corp.	320 Paterson Plank Rd. Carlstadt, NJ	12-21-72	10	150	20	N /A	Cooling
31.	Top Notch Metal Co.	Paterson Plank Rd.	07-03-73	30	400	30	78	Not Used
32.	Trubeck Labs.	Route 17 East Rutherford, NJ	10-10-56	10	201	20	100	Industrial
33.	Anders Chemical Co.	26 Poplar Street East Rutherford, NJ	05-28-81	48	138	18	42	Industrial/ Cooling
34.	Mr. & Mrs. Louis Gallo	One Maple Ave. East Rutherford, NJ	1-22-76	50	300	18	250	Cooling Plastic Machines
35.	Colonial Process Co.	160 East Union Ave. East Rutherford, NJ	12-28-68	85	400	30	67	Industrial*
36.	Howmedica Inv.	359 Veterns Blvd. East Rutherford, NJ	06-27-73	15	500	40	N /A	Washing Pavement and Dumpsters
37.	Vestal Builders	Highway S-3 East Rutherford, NJ	08-20-54	N /A	130	15	95	Industrial
38.	Technical Oil Products	150 Grand Street Moonachie, NJ	07-13-76	15	296	6	124	Cooling
39.	Compo Industries	170 W. Commercial Ave Moonachie, NJ	10-12-81	22	220	28	52	Cooling

TABLE 3
SUMMARY OF PROPOSED ANALYTICAL PROGRAM

	SOIL							GROUND WATER				STREAM			
	3 DEEP WELLS	4 SHALLOW WELLS	4 PIEZOMETERS	SLUDGE PIT	TANK FARM	ADDITIONAL LOCATIONS (2)		WELLS-ROUND I	WELLS-ROUND II	GROUND WATER SEEPS (2 ROUNDS)		WATER (2 ROUNDS)	SEDIMENT		TOTAL
NUMBER OF SAMPLES	12	8	8	2	2	4		10	10	4		6	3		69
PRIORITY POLLUTANTS	●	●	●	●	●	●		●	●	●		●	●		69
PETROLEUM HYDROCARBONS	●	●	●	●	●	●		●	●	●		●	●		69
pH								●	●	●		●			30
ACIDITY/ALKALINITY								●	●	●		●			30
SPECIFIC CONDUCTANCE								●	●	●		●			30

NOTES:

1. ROUND II MONITORING WELL SAMPLES WILL BE ANALYZED FOR INDICATOR PARAMETERS AND THOSE OTHER PARAMETERS FOUND IN AT LEAST ON GROUND WATER SAMPLE IN ROUND I.

2. TWO ADDITIONAL SOIL SAMPLING LOCATIONS TO BE SELECTED IN THE FIELD BY EPA AND PRP COMMITTEE REPRESENTATIVES.

3. REFER TO SECTIONS 2.5.5 THROUGH 2.5.9 IN THE TEXT FOR ADDITIONAL INFORMATION.

TABLE 4

Priority Pollutant List and
Contract Required Detection Limits (CRDL)**

Volatiles	CAS Number	Detection Limits* Low Water[a] ug/L	Low Soil/Sediment[b] ug/Kg
Chloromethane	74-87-3	10	10
Bromomethane	74-83-9	10	10
Vinyl chloride	75-01-4	10	10
Methylene chloride	75-09-2	5	5
1,1-Dichloroethylene	75-35-4	5	5
1,1-Dichloroethane	75-35-3	5	5
trans-1,2-dichloroethylene	156-60-5	5	5
Chloroform	67-66-3	5	5
1,2-Dichloroethane	107-06-2	5	5
1,1,1-Trichloroethane	71-55-6	5	5
Carbon tetrachloride	56-23-5	5	5
1,1,2,2-Tetrachloroethane	79-34-5	5	5
1,2-Dichloropropane	78-87-5	6	6
trans-1,3-dichloropropane	10061-02-6	5	5
Trichloroethylene	79-01-6	5	5
Dibromochloromethane	124-48-1	5	5
1,1,2-Trichloroethane	79-00-5	5	5
Benzene	71-43-2	5	5
cis-1,3-Dichloropropylene	10061-01-5	5	5
2-Chloroethyl vinyl ether	110-75-8	10	10
Bromoform	75-25-2	5	5
Tetrachloroethylene	127-18-4	5	5
Toluene	108-88-3	6	6
Chlorobenzene	108-90-7	6	6
Ethyl benzene	100-41-4	7.2	7.2
Chloroethane	75-00-3	10	10
Dichlorodifluoromethane	75-71-8	10	10
Trichlorofluoromethane	75-69-4	10	10
Acrolein	107-02-8	100	100
Acrylonitrile	107-13-1	100	100
Dichlorobromomethane	75-27-4	5	5

Acid Extractables		Low Water[c]	Low Soil/Sediment[d]
Phenol	108-95-2	10	330
2-Chlorophenol	95-57-8	10	330
2-Nitrophenol	88-75-5	10	330
2,4-Dimethylphenol	105-67-9	10	330
2,4-Dichlorophenol	120-83-2	10	330
4-Chloro-3-methylphenol	59-50-7	10	330
2,4,6-Trichlorophenol	88-06-2	10	330
2,4-Dinitrophenol	51-28-5	50	1600
4-Nitrophenol	100-02-7	50	1600
Pentachlorophenol	87-86-5	50	1600
4,6 Dinitro-o-cresol		50	1600

TABLE 4 (Continued)

Base/Neutral Extractables	CAS Number	Detection Limits[e] Low Water[c] ug/L	Low Soil/Sediment[d] ug/Kg
bis(2-Chloroethyl) ether	111-44-4	10	330
1,3-Dichlorobenzene	541-73-1	10	330
1,4-Dichlorobenzene	105-46-7	10	330
1,2-Dichlorobenzene	95-50-1	10	330
bis(2-Chloroisopropyl) ether	39638-32-9	10	330
N-Nitroso-dipropylamine	621-64-7	10	330
Hexachloroethane	67-72-1	10	330
Nitrobenzene	98-95-3	10	330
Isophorone	78-59-1	10	330
bis(2-Chloroethoxy) methane	111-91-1	10	330
1,2,4-Trichlorobenzene	120-82-1	10	330
Naphthalene	91-20-3	10	330
Hexachlorobutadiene (para-chloro-meta-cresol)	87-68-3	10	330
Hexachlorocyclopentadiene	77-47-4	10	330
2-Chloronaphthalene	91-58-7	10	330
Dimethyl Phthalate	131-11-3	10	330
Acenaphthylene	208-96-8	10	330
Acenaphthene	83-32-9	10	330
2,4-Dinitrotoluene	121-14-2	10	330
2,6-Dinitrotoluene	606-20-2	10	330
Diethylphthalate	84-66-2	10	330
4-Chlorophenyl phenyl ether	7005-72-3	10	330
Fluorene	86-73-7	10	330
N-nitrosodiphenylamine	86-30-6	10	330
4-Bromophenyl phenyl ether	101-55-1	10	330
Hexachlorobenzene	118-74-1	10	330
Phenanthrene	85-01-8	10	330
Anthracene	120-12-7	10	330
Di-n-butylphthalate	84-74-2	10	330
Fluoranthene	206-44-0	10	330
Benzidine	92-87-5	100	1600
Pyrene	129-00-0	10	330
Butyl benzyl phthalate	85-68-7	10	330
3,3'-Dichlorobenzidine	91-94-1	20	660
Benzo(a)anthracene	56-55-3	10	330
bis(2-ethylhexyl)phthalate	117-81-7	10	330
Chrysene	218-01-9	10	330
Di-n-octyl phthalate	117-84-0	10	330
Benzo(b)fluoranthene	105-99-2	10	330
Benzo(k)fluoranthene	207-08-9	10	330
Benzo(a)pyrene	50-32-8	10	330
Indeno(1,2,3-cd)pyrene	193-39-5	10	330
Dibenz(a,h)anthracene	53-70-3	10	330
Benzo(g,h,i)perylene	191-24-2	10	330
1,2 Diphenylhydrazine		10	330

TABLE 4 (Continued)

Pesticides/PCB's	CAS Number	Detection Limits* Low Water[e] ug/L	Low Soil/Sediment[f] ug/Kg
alpha-BHC	319-84-6	0.05	2.0
beta-BHC	319-85-7	0.05	2.0
delta-BHC	319-86-8	0.05	2.0
gamma-BHC (Lindane)	58-89-9	0.05	2.0
Heptachlor	76-44-8	0.05	2.0
Aldrin	309-00-2	0.05	2.0
Heptachlor Epoxide	1074-57-3	0.05	2.0
Endosulfan I	959-98-8	0.05	2.0
Dieldrin	60-57-1	0.10	4.0
4,4'-DDE	72-55-9	0.10	4.0
Endrin	72-20-8	0.10	4.0
Endosulfan II	33213-65-9	0.10	4.0
4,4'-DDD	72-54-8	0.10	4.0
Endrin Aldehyde	7421-93-4	0.10	4.0
Endosulfan Sulfate	1031-07-8	0.10	4.0
4,4'-DDT	50-29-3	0.10	4.0
Chlordane	57-74-9	0.5	20.0
Toxaphene	8001-35-2	1.0	40.0
AROCLOR-1016	12674-11-2	0.5	20.0
AROCLOR-1221	11104-28-2	0.5	20.0
AROCLOR-1232	11141-16-5	0.5	20.0
AROCLOR-1242	53469-21-9	0.5	20.0
AROCLOR-1248	12672-29-6	0.5	20.0
AROCLOR-1254	11097-69-1	1.-	40.0
AROCLOR-1260	11096-82-5	1.0-	40.0

---

[a]Medium Water Contract Required Detection Limits (CRDL) for Volatile Compounds are 100 times the individual Low Water CRDL.

[b]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Volatile Compounds are 100 times the individual Low Soil/Sediment CRDL.

[c]Medium Water Contract Required Detection Limits (CRDL) for acid and base/neutrals extractable Compounds are 100 times the individual Low Water CRDL.

[d]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for acid and base/neutral extractable Compounds are 60 times the individual Low Soil/Sediment CRDL.

[e]Medium Water Contract Required Detection Limits (CRDL) for Pesticide Compounds are 100 times the individual Low Water CRDL.

[f]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Pesticide compounds are 60 times the individual Low Soil/Sediment CRDL.

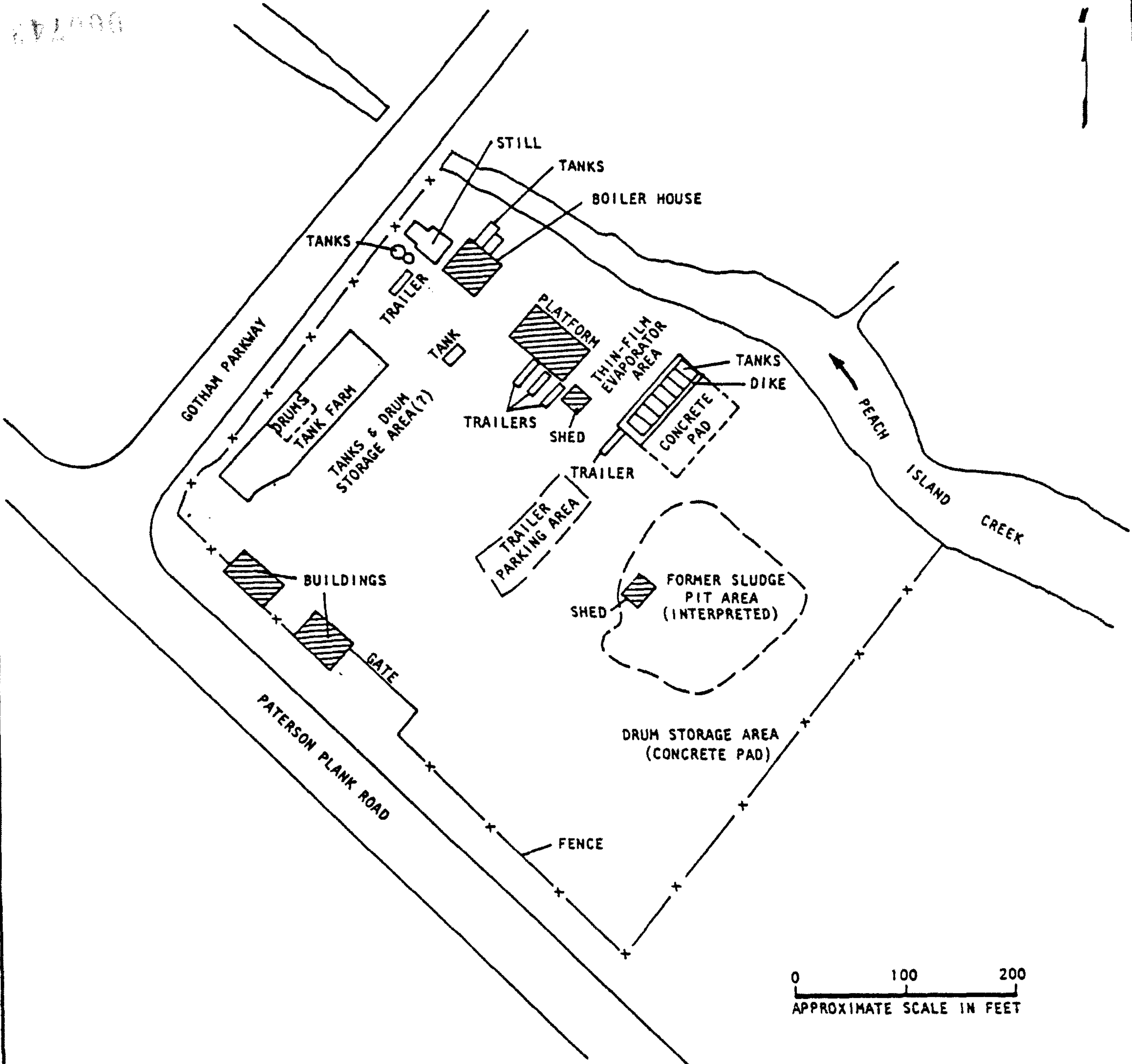
*Detection limits listed for soil/sediment are based on wet weight. The detection limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the contract, will be higher.

**Specific detection limits are highly matrix dependent. The detection limits listed herein are provided for guidance and may not always be achievable.

TABLE 5

ANALYTICAL METHODS AND DETECTION LEVELS FOR METALS

		Contract Required Detection Level (ug/l)
Antimony	Method 204.2	60
Arsenic	Method 206.2	20
Beryllium	Method 210.2	5
Cadmium	Method 213.2	5
Chromium	Method 218.2	10
Copper	Method 220.2	25
Lead	Method 239.2	5
Mercury	Method 245.1	0.2
Nickel	Method 248.2	40
Selenium	Method 270.2	5
Silver	Method 272.2	10
Thallium	Method 297.2	10
Zinc	Method 289.2	20



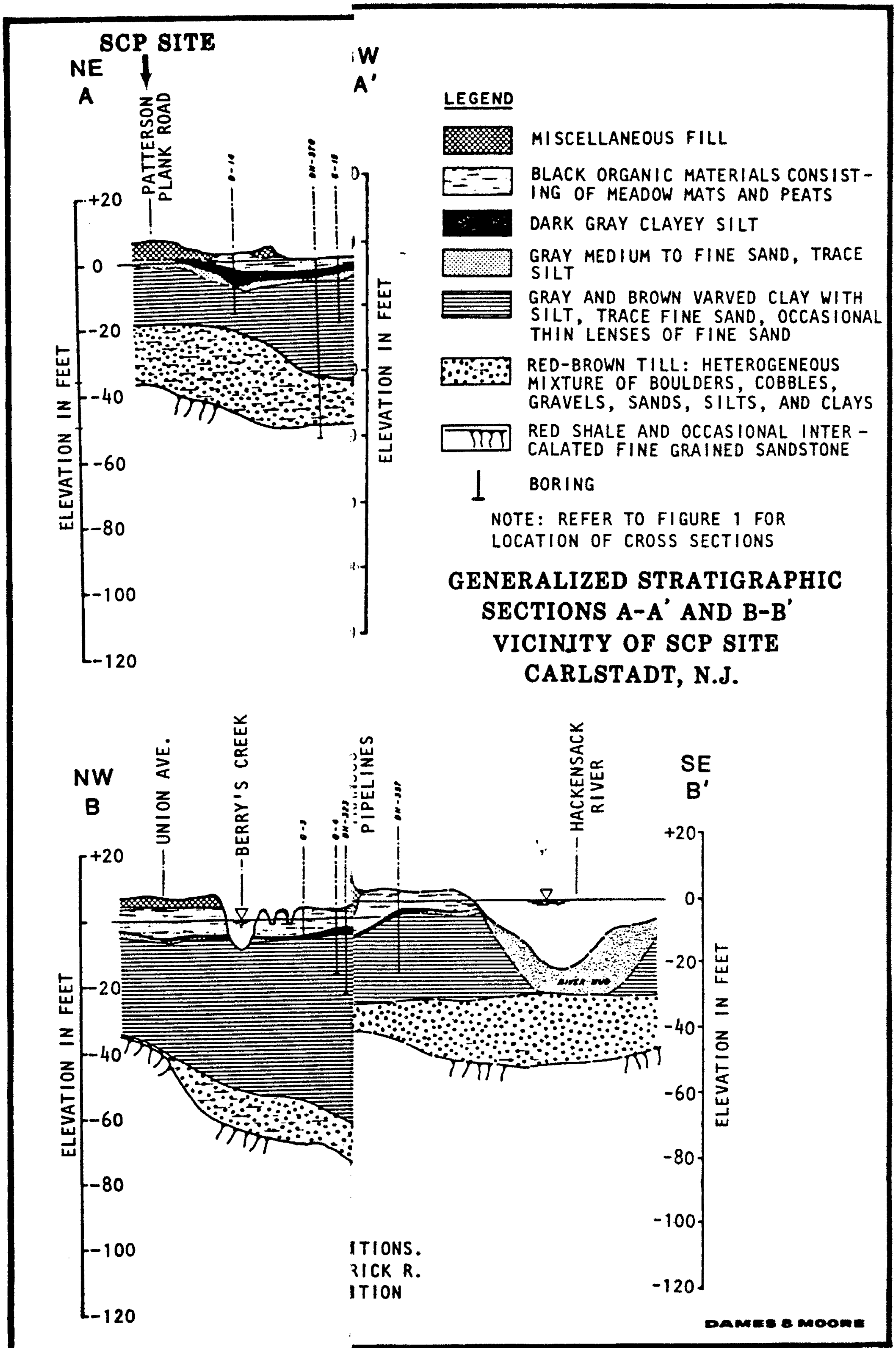
SITE LAYOUT
SCP SITE
CARLSTADT, NEW JERSEY

NOTES:
1. ALL DRUMS, MOST TANKS AND TANK TRAILERS HAVE BEEN REMOVED AND SOME FACILITIES HAVE BEEN DISMANTLED SINCE OPERATIONS CEASED IN 1979.
2. BASE MAP REFERENCE: AERIAL PHOTOGRAPH NO. 3818-6-35, MARCH 27, 1984. SCALE: 1" = 100'±

000743

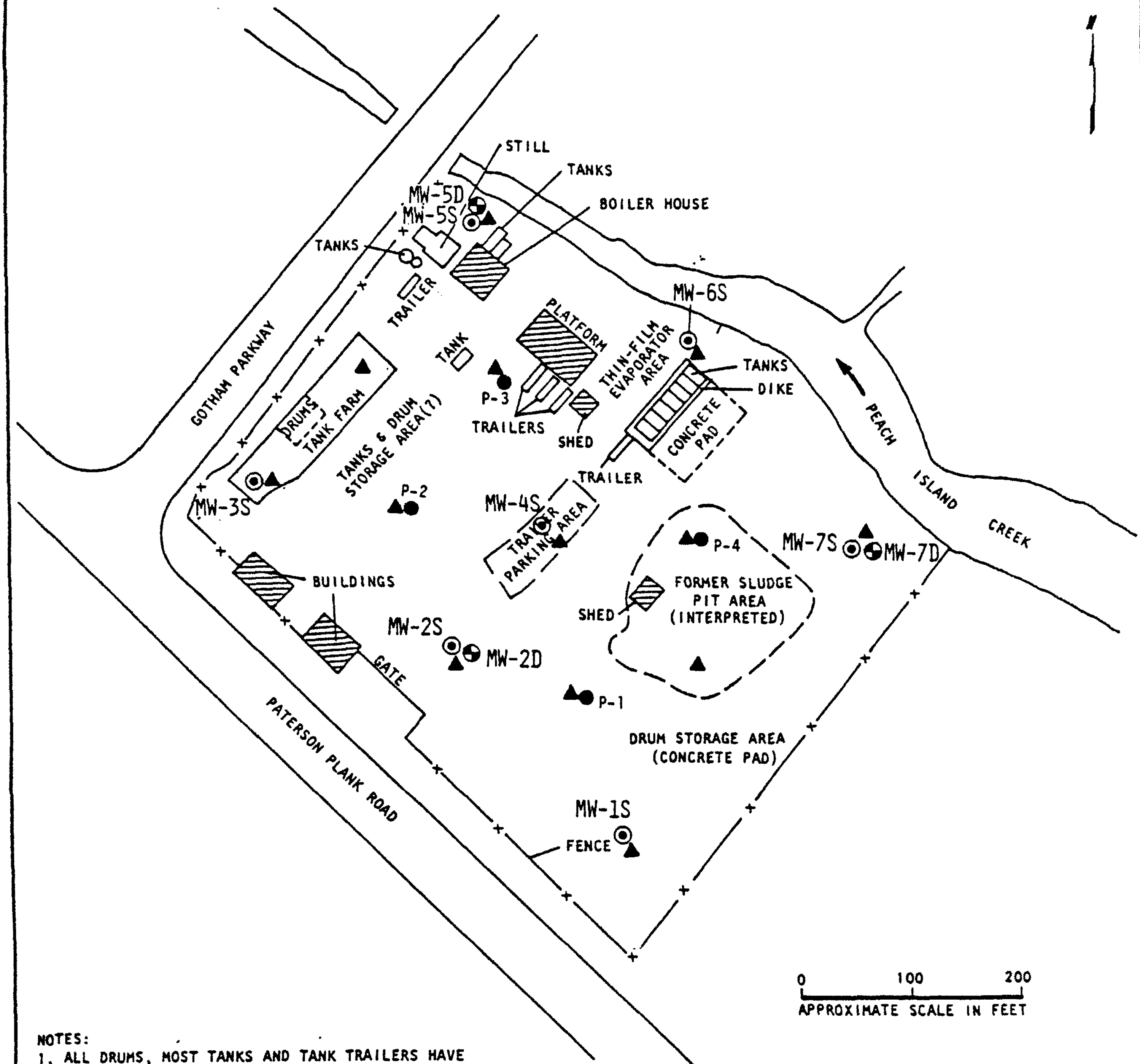
DAMES & MOORE

FIGURE 2



GENERALIZED STRATIGRAPHIC SECTIONS A-A' AND B-B' VICINITY OF SCP SITE CARLSTADT, N.J.

FIGURE 3



NOTES:
1. ALL DRUMS, MOST TANKS AND TANK TRAILERS HAVE BEEN REMOVED AND SOME FACILITIES HAVE BEEN DISMANTLED SINCE OPERATIONS CEASED IN 1979.
2. BASE MAP REFERENCE: AERIAL PHOTOGRAPH NO. 3818-6-35, MARCH 27, 1984. SCALE: 1" = 100'±
3. TWO ADDITIONAL SOIL SAMPLING LOCATIONS TO BE SELECTED IN THE FIELD.

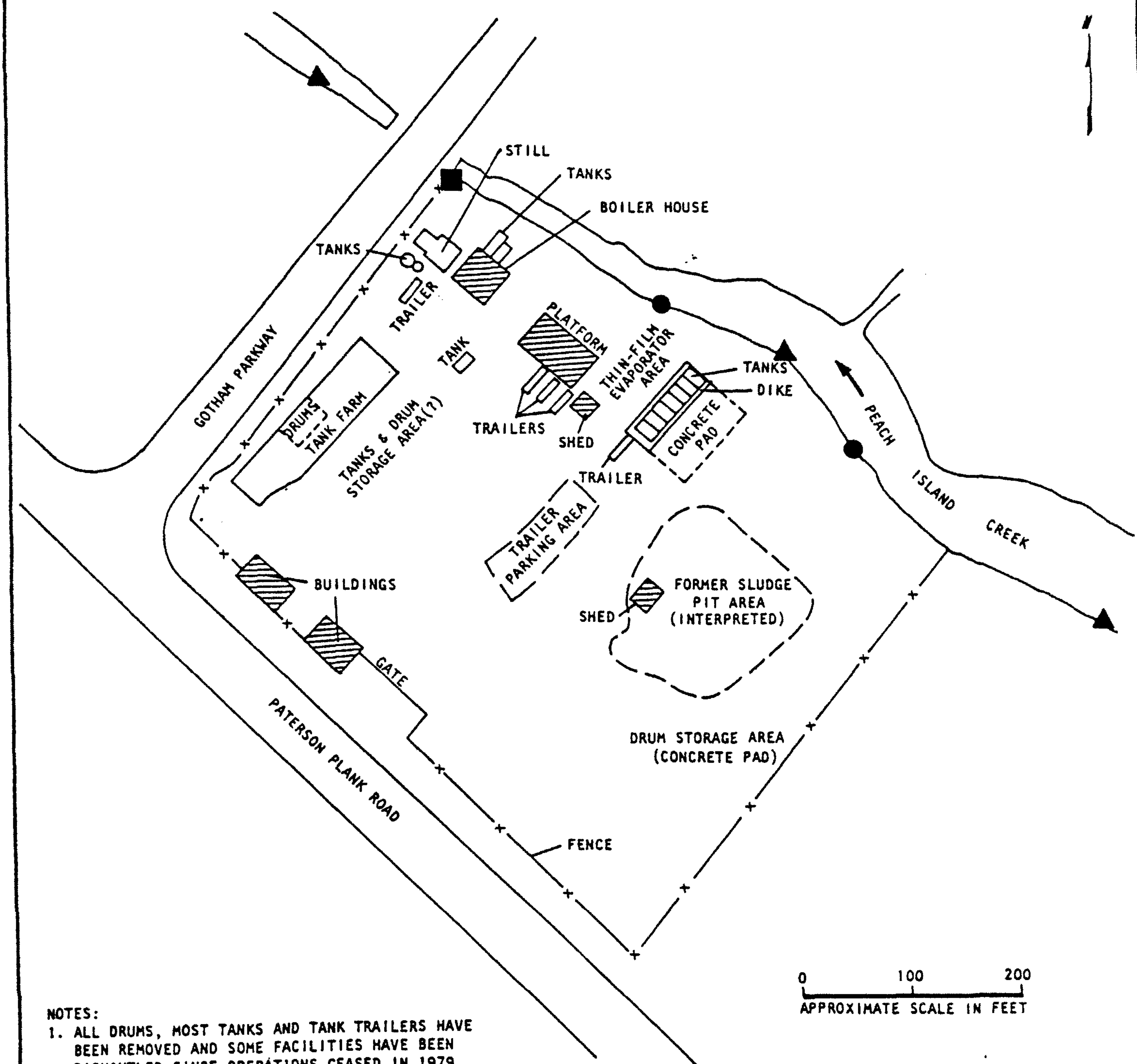
PROPOSED SOIL AND GROUNDWATER SAMPLING LOCATIONS

KEY:
MW-1S ⦿ SHALLOW MONITORING WELL
MW-2D ◕ DEEP MONITORING WELL
P-1 ● SHALLOW PIEZOMETER
▲ SHALLOW BORING OR TEST PIT FOR SOIL SAMPLING

000745

DAMES & MOORE

FIGURE 4



NOTES:
1. ALL DRUMS, MOST TANKS AND TANK TRAILERS HAVE BEEN REMOVED AND SOME FACILITIES HAVE BEEN DISMANTLED SINCE OPERATIONS CEASED IN 1979.
2. BASE MAP REFERENCE: AERIAL PHOTOGRAPH NO. 3818-6-35, MARCH 27, 1984. SCALE: 1" = 100'±

PROPOSED GROUND WATER SEEPS AND STREAM SAMPLING LOCATIONS

KEY:

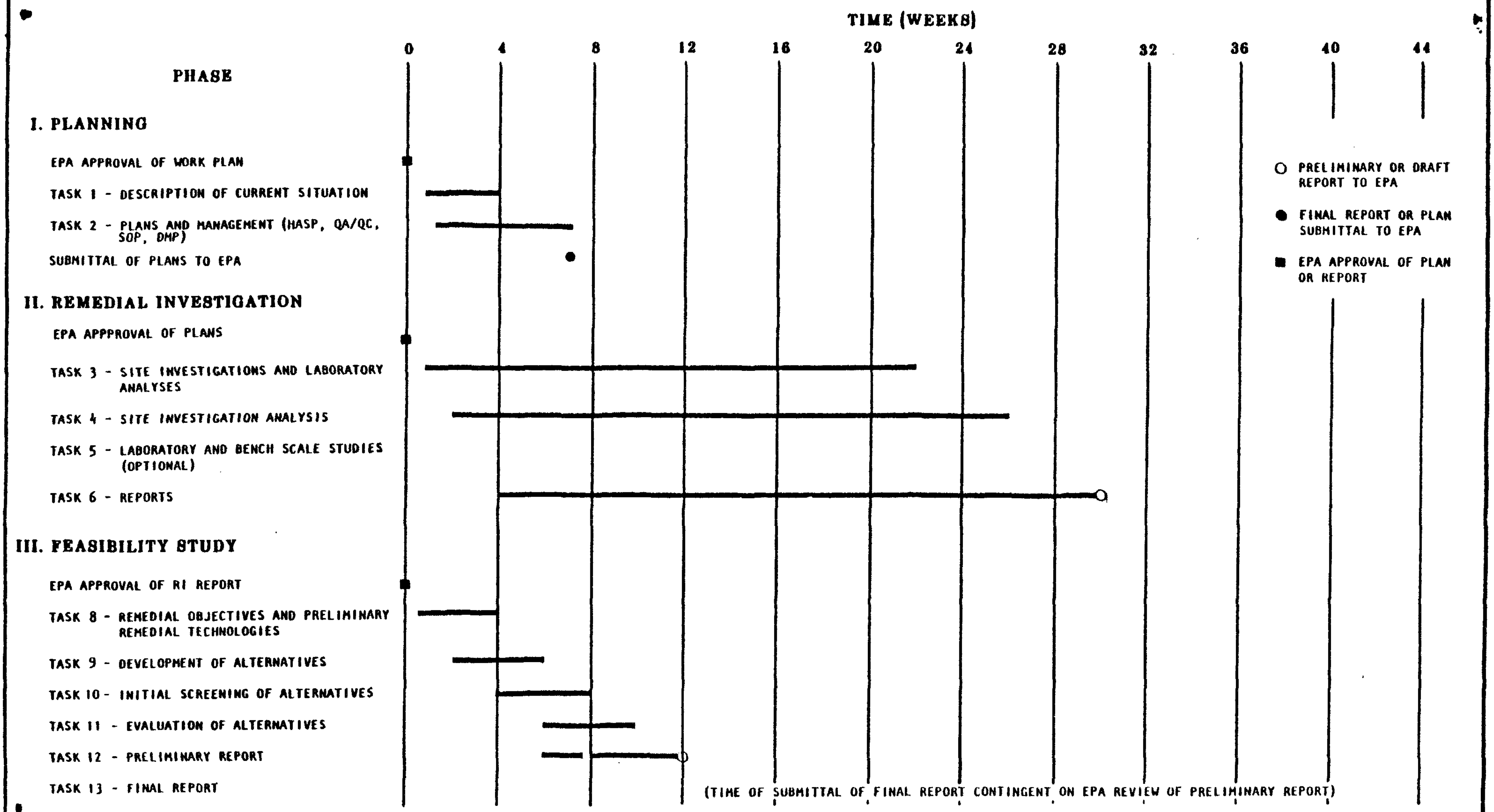
▲ STREAM WATER AND SEDIMENT SAMPLING LOCATION (APPROXIMATE)

● GROUND WATER SEEP SAMPLING LOCATION (APPROXIMATE)

■ TIDE RECORDER

DAMES & MOORE

FIGURE 5



NOTE:
1. SCHEDULE ALLOWS 5 DAYS FOR WEATHER DELAYS

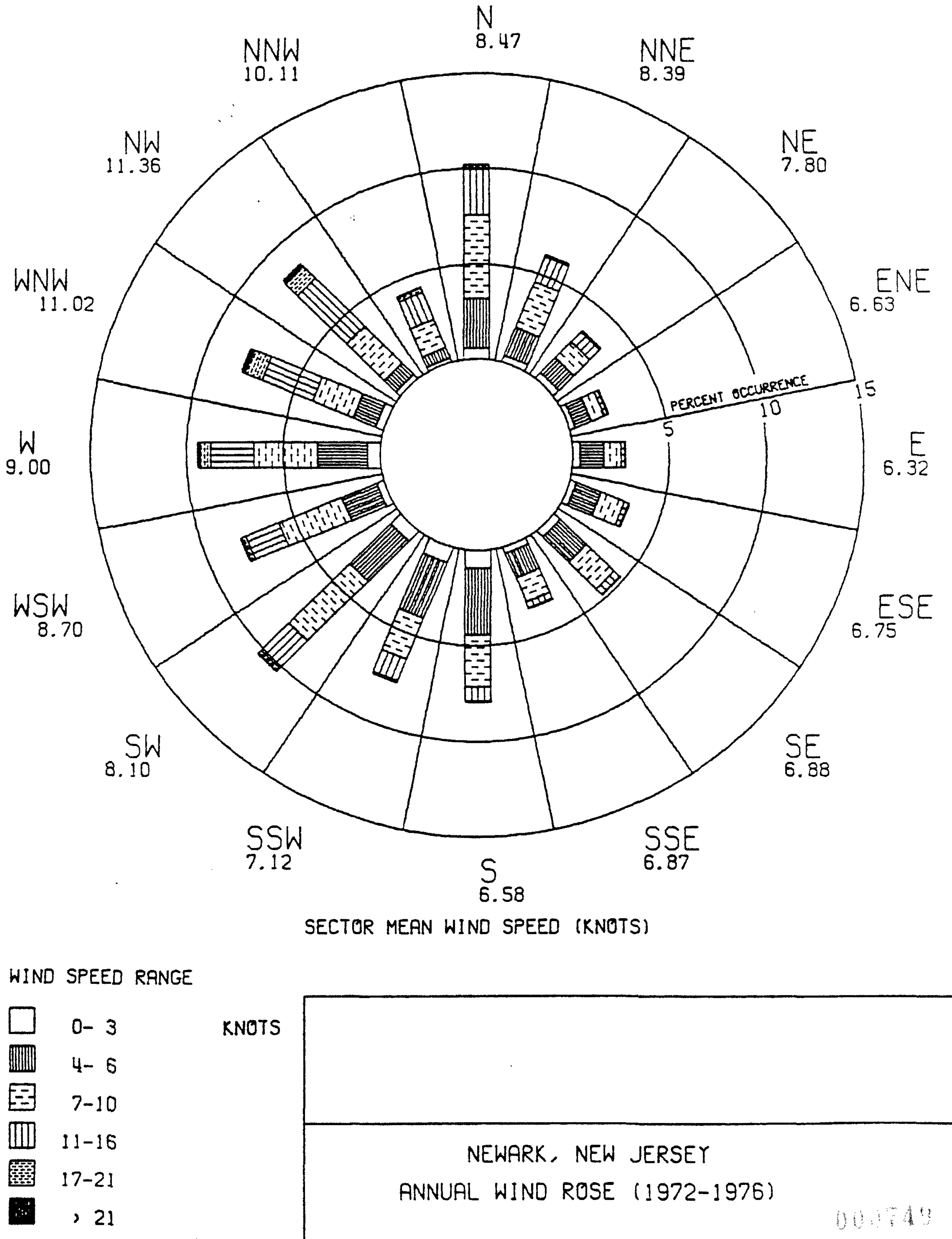
PROPOSED SCHEDULE
RI/FS INVESTIGATIONS
SCP SITE
CARLSTADT TOWNSHIP
BERGEN COUNTY, NEW JERSEY

FIGURE 6

APPENDIX A

WIND ROSE DIAGRAMS

000748



NEWARK, NEW JERSEY
ANNUAL WIND ROSE (1972-1976)

000749

FIGURE A-1

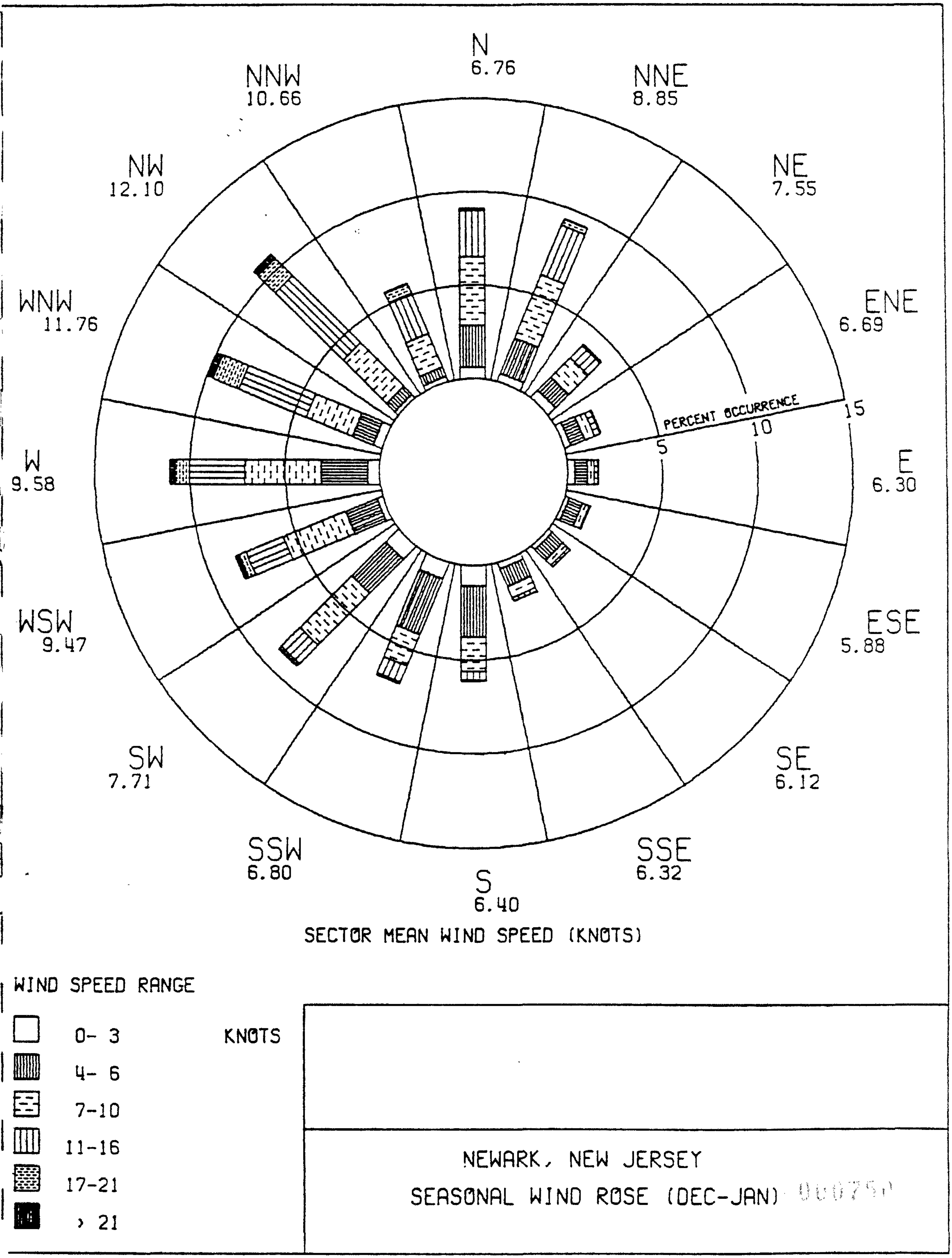
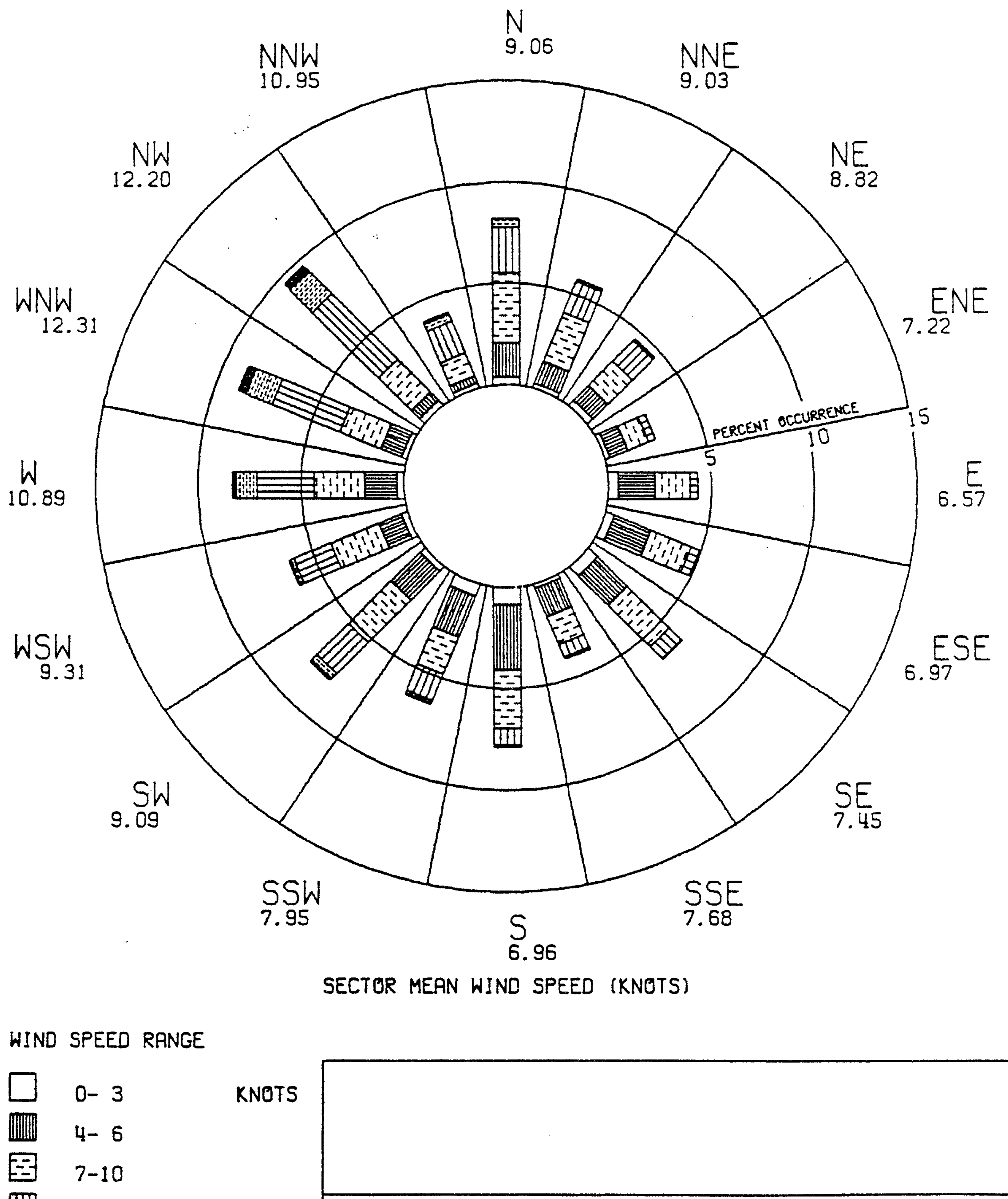

N
6.76
NNE
8.85
NE
7.55
ENE
6.69
E
6.30
ESE
5.88
SE
6.12
SSE
6.32
S
6.40
SSW
6.80
SW
7.71
WSW
9.47
W
9.58
WNW
11.76
NW
12.10
NNW
10.66
PERCENT OCCURRENCE
5
10
15
SECTOR MEAN WIND SPEED (KNOTS)
WIND SPEED RANGE
0- 3
4- 6
7-10
11-16
17-21
› 21
KNOTS
NEWARK, NEW JERSEY
SEASONAL WIND ROSE (DEC-JAN)

FIGURE A-2

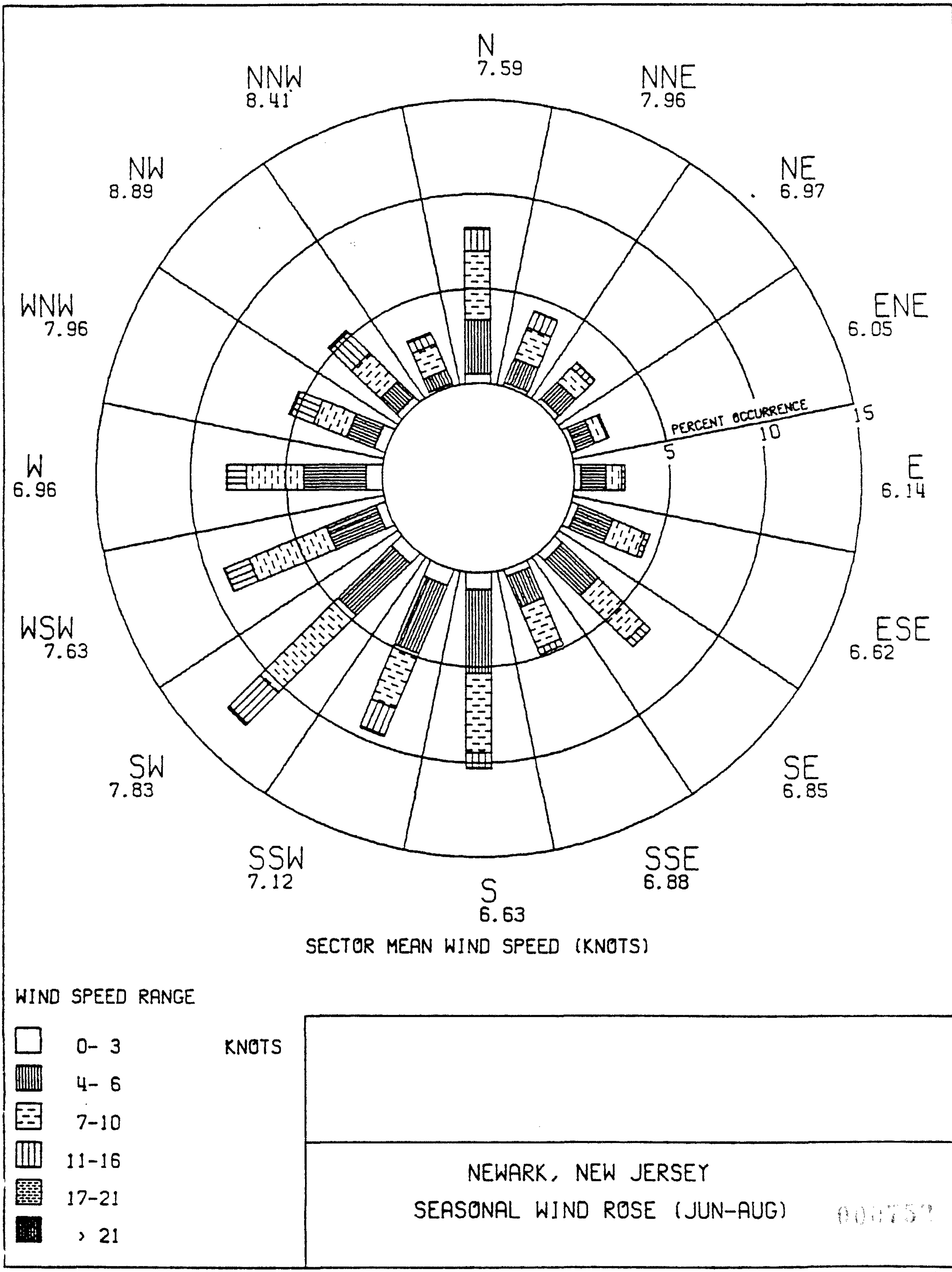


NEWARK, NEW JERSEY

SEASONAL WIND ROSE (MAR-MAY)

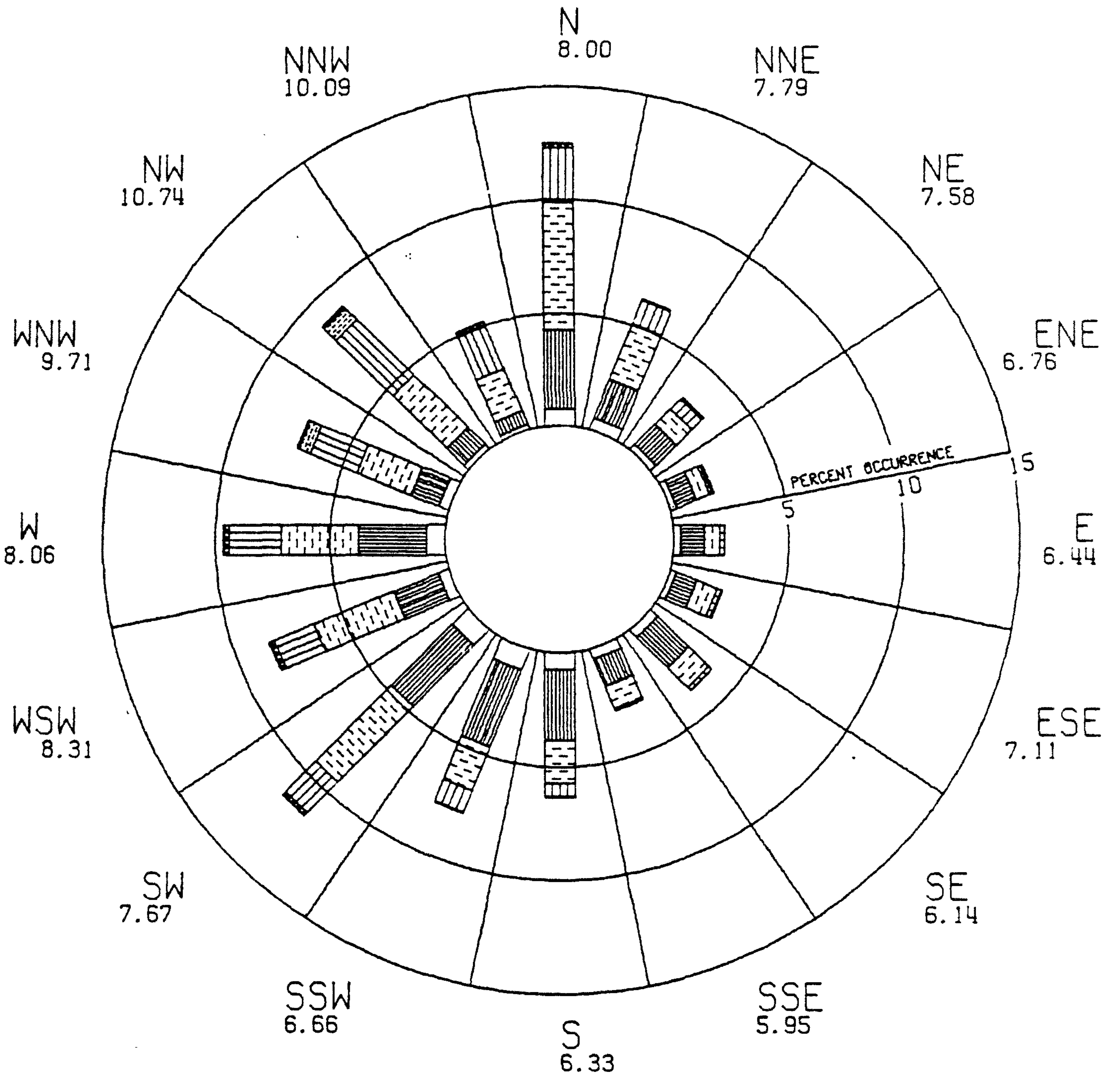
000751

FIGURE A-3



NEWARK, NEW JERSEY
SEASONAL WIND ROSE (JUN-AUG)

FIGURE A-4



SECTOR MEAN WIND SPEED (KNOTS)

WIND SPEED RANGE

0- 3 KNOTS
4- 6
7-10
11-16
17-21
› 21

NEWARK, NEW JERSEY

SEASONAL WIND ROSE (SEP-NOV)

FIGURE A-5

APPENDIX B

SCP INVENTORY

cc: ... TO Bir / Nate Edelstein

Scientific Chemical Processing, Inc.

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NEWARK, NEW JERSEY 07105
PHONE 201-589-7777

May 10, 1979

MAY 18 1979

State of New Jersey
Solid Waste Administration
32 East Hanover St.
Trenton, N.J. 08625

Dear Sirs:

In accordance with the terms of agreement reached between Mr. Frank Crahay, Esq. representing Scientific Chemical Processing, Inc., Energall, Inc. and Presto, Inc., Mr. Nathan Edelstein, Deputy Attorney General, representing the State of New Jersey, and the Honorable Sonia Morgan, J.A.D., attached are inventories as of May 10, 1979 and manifest reports through March 31, 1979 for the above named facilities. Energall, Inc., however, markets proprietary fuel mixtures, and has not yet received material under the manifest system.

As the inventories suggest, drums are segregated by product. The majority were received prior to the inception of the manifest system and we have intensified our efforts to substantially reduce their number within ninety days.

If there is any further information you require, please do not hesitate to contact this office.

Very truly yours,

Herbert G. Case

Herbert G. Case

HGC/lh

000758

Presto Inc.

411 WILSON AVE.
NEWARK, NEW JERSEY 07105
PHONE. 201-589-8084

DRUM & TANK INVENTORY 5-10-79

CRUDE STORAGE TANKS

T-1	1500 gallons oil-water from distillation still bottoms.
T-2	Empty
T-3	Empty
T-4	Empty
T-5	500 gallons hypochlorite
T-6	4000 gallons mixed chlorinated (tri, m.c., 1-1-1, Perk)
T-7	5000 gallons Trichloroethylene
S-11	400 gallons Trichloroethylene
S-12	200 gallons Mixed Chlorinated

FINISHED STORAGE TANKS

T-11	100 gallons 1-1-1 Trichloroethane
T-12	100 gallons Mixed chlorinated
T-13	Empty
T-14	Empty

FINISHED DRUMS

16	Mixed chlorinated
1	1-1-1 Trichloroethane

EMPTY DRUMS

200	Used, for sale
7	Reconditioned

CRUDES (ANALYZED)

65	DuPont Cyrel Solvent (30 gal)
20	DuPont Cyrel Solvent (55 gal)
31	Perkchloroethylene
20	Chloroform
42	1-1-1 Trichloroethane
95	Mixed Chlorinated
20	Methylene Chloride
9	Trichloroethylene
91	Trichloroethylene (low yield, from DuPont)

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DRUM HANDLING PROCEDURE

1. All incoming drums are numbered and logged in our drum inventory book with the following information:
    1. Our code number.
    2. Manifest number.
    3. Customer.
    4. Date of Arrival.
    5. Size of drum (55, 30, 15, 5)
    6. Represented content.

2. Every drum is sampled and notation made as to fullness (1/3, 1/2, etc.)

3. Every sample is distilled and gas chromatographed and the following information recorded:
    1. Boiling range
    2. % yield
    3. Actual contents (tri, perk, etc.)

   When all drums are from one customer and are supposed to be the same material, a composite is made and analyzed. If the analysis is not as represented, then every sample is analyzed.

4. After analysis, drums are stacked in various piles of like contents and/or pumped into crude storage tanks of like materials until distilled.

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CONFIDENTIAL

FEEDSTOCKS USED IN [illegible] AND SCP

MATERIALS	GEN'L CLASSIFICATION	USAGE
toluene xylene hexane mineral spirits [illegible]	aromatics and paraffins	40-60%
phenolic resins oils (#2, #4,) greases still bottoms	"heavy" organics	10-20%
methanol ethanol isopropanol butanol	alcohols	20-40%
acetone MEK MIBK	ketones	10-20%
glycol ether ethyl acetate butyl acetate dimethyl formamide (DMF) tetrahydrofuran (THF)	miscellaneous	5-10%
resins pigment	solids	limited to certain materials

Energall, Inc.
411 Wilson Ave.
Newark, N.J. 07105

May 10, 1979

INVENTORY

BULK

TANK NO.		MATERIAL	VOLUME
T-31	*	Fuel Blend ....;	3000 gal.
T-32	*	Fuel Blend	10,000 gal.
T-33		Thinner, crude (mixed solvents, ketones, alcohol, esters, aromatic hydrocarbons, paints, pigments of varying concentration)............................	10,000 gal.
T-34	*	Fuel Blend (Same as above)....................	10,000 gal

DRUMS

NONE

* see attached description

Scientific Chemical Processing, Inc
411 Wilson Ave.
Newark, N.J. 07105

May 10, 1979

DRUM INVENTORY

MATERIAL	VOLUME
Toluene, Ethyl Acetate, Trichloroethylene, Isapropoanl containing Polyurethane resin	690 drums
Mixed Plastisal, Plasticizer, Latex Emulsions	630 drums
Varnish (scrap)	180 drums
Various mixed organic residues from essential oil & fragrance mfg.	380 drums
Mixed Solvents (ketones, alcohols, esters, aromatics)	370 drums
Phenolic Resins, Phenoxy Polymer in Butanol and Toluene	1031 drums
Acryloid Coatings, Acrylic, Styrene Polymers & Mixed Solvents	482 drums
Mixed Alcohols and aqueous solution containg glycols & alcohols and thiourea couplers, zinc chloride and silicoa.	135 drums
Dipropylene Glycol, High Molecular Weight Paraffins C_{18} to C_{20} Misc. Organic Residues	300 drums
Paint, Pigment Residues , Spent Filter Aid	271 drums
Silica	36 drums
Photo Clarifier	13 drums
Triethanolamine	10 drums
Mixed Polyols	118 drums
Empty bottles (previously contained resin, surfactants and solvent samples)	10 drums
Misc. Solvents & Lab Samples	30 drums
Epoxy Paint	27 X 5 gal pails

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CONFIDENTIAL

FEEDSTOCK- USED IN K[illegible] AND SCP*

MATERIALS	GEN'L CLASSIFICATION	USAGE
toluene xylene hexane mineral spirits	aromatics and paraffins	40-60%
phenolic resins oils #2, #4, #6 greases still bottoms	"heavy" organics	10-20%
methanol ethanol isopropanol butanol	alcohols	20-40%
acetone MEK MIBK	ketones	10-20%
glycol ether ethyl acetate butyl acetate dimethyl formamide (DMF) tetrahydrofuran (THF)	miscellaneous	5-10%
resins pigment	solids	limited to certain materials

Scientific Chemical Processing, Inc.
411 Wilson Ave.
Newark, N.J. 07105

May 10, 1979

BULK INVENTORY

Tank No.		Material	Volume (gallons)
T-23	*	Fuel Blend	3,000
T-24	*	Fuel Blend	3,000
T-25	*	Fuel Blend	3,000
T-20	*	Fuel Blend	3,000
T-22	*	Fuel Blend	3,000
T-8		Aqueous solution containing solvents & fuel residues (ketones, alcohols, esters, aromatic and aliphatic hydrocarbons, paint & pigments)	10,000
T-26		MEK (crude)	10,000
T-21		MEK (crude)	3,000
T-28		Lacquer Thinner Feed	3,000
T-27		Recovered Thinner (ketones, alcohols, esters, aromatic hydrocarbons of varying concentration)	2,500
T-29		Lacquer Thinner Feed	3,000
TRAILERS			
T-64		Mixed Solvent Crude (ketones, alcohols, esters, aromatic and aliphatic hydrocarbons, paint & pigments of varying concentration)	4,500
T-12	*	Fuel Blend	5,400
VT-202	*	Fuel Blend	6,000
VT-20	*	Fuel Blend	6,000

*see attached description

00076[illegible]

Scientific Chemical Processing, Inc.
216 Paterson Plank Rd.
Carlstadt, N.J. 07072

May 10, 1979

DRUM STORAGE

MATERIAL	VOLUME
Benzol Rec., Toluol Rec., Mother Liq. Tars, Uvinul T-335	240 drums
Mixed Solvents (ketones, alcohols, glycol ethers, water)	72 drums
Mixed Plastisol, Plasticizers, Latex Emulsion	162 drums
Acryloid coatings, acrylic, styrene polymer & mixed solvents	312 drums
Toluene, Ethyl Acetate, Trichloroethylene & Isopropanol containing Polyurethane resins	150 drums
Semi-solid Tars containing Toluol, Xylol & MIBK	310 drums
Dipropylene Glycol, High Molecular Weight Paraffins C_{18} to C_{20} Misc. Organic Residues	315 drums
Phenolic Resins, Phenoxy Polymer in Butanol and Toluene, Clay containing Octyl Phenol	468 drums
Various paints, lacquers and wash solvents (ketones, alcohols, esters, aromatic & aliphatic types) for recovery	1574 drums
Spent Etch	52 drums
Paint & Pigment Residues, Spent Filter Aid	246 drums

BULK INVENTORY CONT.

Tank No.	Material	Volume (gallons)
T-110	Crude Solvents, Paint & Fuel Residues (ketones, alcohols esters, aromatic and aliphatic hydrocarbons, still bottoms, paint and pigments of varying concentration and water)	3,000
T-111	Latex Emulsion	8,000
T-112	Methyl Ethyl Ketone (crude)	5,000
T-113	Lacquer Thinner Feed	8,000
T-114	Acqueous/Solvent Mix (cont. ketones, alcohol, esters, still bottoms, aromatic and aliphatic hydrocarbons, paint & pigments of varying concentration)	7,000
T-115	Aqueous/Solvent Mix (Same as above)	7,000
T-116	Aqueous/Solvent Mix (Same as above)	20,000
T-117	Aqueous/Solvent Mix (Same as above)	20,000
T-118	Aqueous/Solvent Mix (Same as above)	20,000
T-119	Oil Distillate	5,000
T-200	Empty	
T-201	Aqueous/Solvent Mix (cont. ketones, alcohol, esters, still bottoms, aromatic and aliphatic hydrocarbons, paint & pigments of varying concentration)	10,000
T-202	Aqueous/Solvent Mix (Same as above)	5,000

Tank Wagons

VTS-1	Recovered Phosphoric Acid	2,000
VTS-131	Empty	
VTS-33	Empty	
VTS-5	Empty	
VTS-402	Empty	
VTS-219	Empty	
VTS-7	Aqueous/Solvent Mix (cont. ketones, alcohol, esters, still bottoms, aromatic and aliphatic hydrocarbons, paint & pigments of varying concentration)	4,000

Scientific Chemical Processing, Inc.
216 Paterson Plank Rd.
Carlstadt, N.J. 07072

May 10, 1979

BULK INVENTORY

Tank No.	Material	Volume (Gallons)
T-1	Oil Distillate...	10,000
T-2	#2 Fuel Oil..	5,000
T-11	Empty..	
T-12	Methanol (recovered).....................................	2,000
T-24	Thin Film Bottoms (mixed ketone, alcohols, esters, aromatic hydrocarbons, pigments, paints of varying concentration)..	1,000
T-25	Thin Film Bottoms (mixed ketone, alcohols, esters, aromatic hydrocarbons, pigments, paint of varying concentration)..	6,000
T-26	Lacquer Thinner Feed (mixed solvents, ketones, alcohol, esters, aromatic hydrocarbons, paint, pigments of varying concentration)..................................	2,500
T-27	Thin Film Bottoms (mixed ketones, alcohols, esters, aromatic hydrocarbons, pigments, paints of various concentration)..	6,000
T-29	Thinner (recovered)(ketones, alcohols, esters and aromatic hydrocarbons)..................................	2,500
T-30	Thinner (recovered)(ketones, alcohols, esters and aromatic hydrocarbons)..................................	2,500
T-31	Crude Solvents, Paint & Fuel Residues(ketones, alcohol, esters, aromatic and aliphatic hydrocarbons, still bottoms, paint and pigments of varying concentration)....	10,000
T-32	Crude Solvents, Paint & Fuel Residues (Same as above)....	10,000
T-33	Crude Solvents, Paint & Fuel Residues (Same as above)....	10,000
T-34	Crude Solvents, Paint & Fuel Residues (Same as above)....	10,000
T-35	Crude Solvents, Paint & Fuel Residues (Same as above)....	10,000
T-36	Crude Solvents, Paint & Fuel Residues (Same as above)....	10,000
T-37	Crude Solvents, Paint & Fuel Residues (Same as above)....	10,000
T-101	Crude Solvents, Paint & Fuel Residues (Same as above)....	14,000
T-102	Crude Solvents, Paint & Fuel Residues (Same as above)....	14,000
T-103	Sodium Sulfate Solution..................................	15,000
T-104	Crude Solvents, Paint & Fuel Residues (ketones, alcohol, esters, aromatic and aliphatic hydrocarbons, still bottoms, paint and pigments of varying concentration)....	5,000
T-105	Empty..	
T-106	Crude Solvents, Paint & Fuel Residues(ketones, alcohol, esters, aromatic and aliphatic hydrocarbons, still bottoms, paint and pigments of varying concentration)....	5,000
T-107	Empty..	
T-108	Empty..	
T-109	Crude Solvents, Paint & Fuel Residues(ketones,alcohols, esters, aromatic and aliphatic hydrocarbons, still bottoms, paint and pigments of varying concentration)....	5,000

CRUDES (UN-ANALYZED)

168	from GTE
35	from Rec. Resource
60	Misc.

STILL BOTTOMS

54	½ full of sludge
201	½ full of water-oil mixtures

1135 TOTAL DRUMS